web designer

5 HTML5 | CSS3 | jQuery | WordPress

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QUICKER SMOOTHER ANIMATION
TOP TECHNIQUES FOR BEST PERFORMANCE

FASTER BUILDS WITH CUSTOM CODE

HTML & CSS PATTERNS

LEARN HOW TO CREATE BESPOKE CODE COMPONENTS TO USE AGAIN & AGAIN

49 DESIGNER RESOURCES
TEMPLATES, FONTS, ACTIONS & MOCKUPS

COMPLETE GUIDE TO GIT
TAKE CONTROL OF PROJECTS FOR FREE

HOW GOOD IS THREE.JS?
DISCOVER HOW TO CREATE INTERACTIVE 3D MODELS

THE PRO GUIDE TO WORDPRESS
23 OF THE BEST PLUGINS HAND-PICKED BY EXPERTS

BUILD iOS WEB APPS
RE-CREATE THE STYLE OF APPLE APPS WITH HTML & CSS
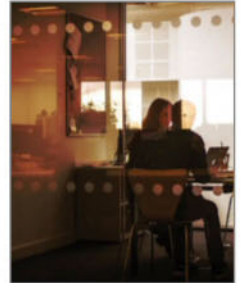
Welcome to the issue

THE WEB DESIGNER MISSION
❝❝To be the most accessible and inspiring voice for the industry, offering cutting-edge features and techniques vital to building future-proof online content ❞❞

Steve Jenkins

❝❝Social platforms help us understand what motivates and demotivates people ❞❞

It's digital pioneers Amaze's 20th birthday. **Web Designer** helps them celebrate.
Page 32

Get tried and tested solutions to common design problems

Design patterns are something of an unsung hero in the world of web design. Everyone is using them, but you probably don't even know you are. They are applied to HTML, CSS, UI, JS and RWD. Why? Because they provide tried-and-tested solutions to common design problems. This means faster builds and better code, and who doesn't want that? Our lead feature (page 38) delves into design patterns and gives the low-down on the different types, what they do and what they don't do. Plus, it reveals what they can do for you and the best tools for you to work with. Keeping

design patterns company is another unsung hero, WordPress. The web publishing platform provides the power for millions of sites. But, the real power lies in its plugin library. Install the right add-on and WordPress can instantly become the perfect bepoke option for you. WordPress developer and expert Chris Woodley hand-picks 23 of the best plugins that will take your WordPress install to new levels over on page 64.

Keeping control of code is never easy, add in more than one developer and it gets even crazier. Our complete guide to Git (page 72) takes you through all you need to know to manage your projects for free.

Plus, we have our staple selection of CSS, HTML and JS tutorials to keep you busy. Enjoy the issue.

❝❝Design patterns are a useful means to communicate how an application has been built or even how it is planned to be built. ❞❞

Follow us on Twitter for all the news & conversation 🐦 **@WebDesignerMag**
Visit our blog for opinion, freebies & more 👆 **www.webdesignermag.co.uk**

This issue's panel of experts

Welcome to that bit of the mag where we learn more about the featured writers and contributors...

❝ Technologies and frameworks that have not been produced with core underlying design patterns would be extremely difficult to understand, work with and maintain ❞

FASTER BUILDS WITH CUSTOM CODE
## HTML & CSS PATTERNS

Luke Guppy

Luke is a frontend director who has been in the industry for over ten years. This issue he delves into the world of design patterns and how they affect every facet of web design. Find out why you need them, how to use them and the best resources out there to build with them. **Page 38**

Chris Woodley

Chris is the lead developer at Forme Creative based in Birmingham. They specialise in custom WordPress design. This issue Chris discusses the best WordPress plugins and how to select the right plugin for projects. **Page 64**
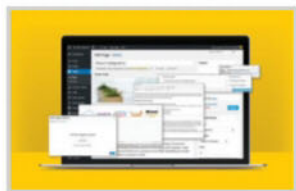
Tam Hanna

Tam is a veteran in the world of coding and has worked with a host of coding languages. This issue he provides an expert insight into everything you need to know to start and continue using Git to take control of your project's code. **Page 72**

Mark Shufflebottom

Mark is a professor of Interaction Design at Sheridan College of Advanced Learning near Toronto. In this issue Mark re-creates the old 'Simon Says' game in the browser with three.js to create an interactive 3D toy. **Page 46**

Matt Gifford

Matt Gifford is a web development consultant and industry author from Cambridge. He has over a decade of industry experience and in his latest tutorial he delves into rapid app development with the Lucee library. **Page 84**

Sean Tracey

Sean is a creative technologist who lives in the south east. He loves playing with the latest JavaScript APIs. This issue Framework7 is his tool of choice for demonstrating how to create iOS-style apps with HTML, CSS & JS. **Page 52**

Mark Billen

Mark is a freelance technology journalist with a background in web design and development. This issue he tackles the Lightbox pages and reveals how to create a host of quick-fire techniques you need to know. **Page 14**

Leon Brown

Leon is a freelance developer and trainer who assists web developers in creating efficient and secure code. This issue he once again unleashes CSS and JavaScript to demonstrate how to code animated circles. **Page 50**

Ralph Saunders

Ralph Saunders is a front-end developer at Redweb. In this issue he tells us how to create high performance web animations using a variety of techniques – including getting physical with JavaScript. **Page 58**

Got web skills?

We're always looking for the hottest web-design talent. Email **webdesigner@imagine-publishing.co.uk** with examples of your creative work

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IMAGINE PUBLISHING

♻ recycle
When you have finished with this magazine please recycle it.

<meta>

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Cutting-edge features, techniques and inspiration for web creatives

Chat with the team and other readers and discuss the latest tech, trends and techniques. Here's how to stay in touch...

✉ webdesigner@imagine-publishing.co.uk 🐦 @WebDesignerMag 👆 www.webdesignermag.co.uk

Quick look...

Cover focus

FASTER BUILDS WITH CUSTOM CODE
HTML & CSS PATTERNS

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32 **ProFile:** Amaze
Digital pioneers reach their 20th birthday
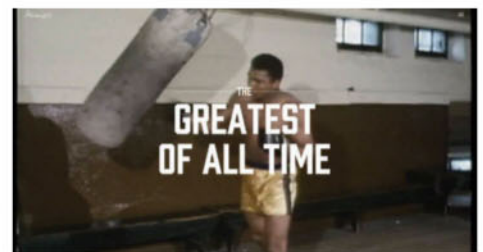
18 **Lightbox:** Ali
A fitting tribute to the G.O.A.T

GREATEST OF ALL TIME

THE MAN

THE LEGEND

FileSilo

A comprehensive collection of free designer resources!

- 96 Minutes of jQuery video guides
- 3 Web templates from W3Layouts
- 2 Fonts from Typodermic
- 28 B&W Photoshop film emulations

94

<tutorials>

Web gurus take you step-by-step through professional techniques

web workshop

web developer

<header>

The tools and trends to inspire your web projects

❝ My work involves working with brands from all over the world ❞

Derek Samuel

<header>

<header>

The tools and trends to inspire your web projects

If you have a creative project, new web product or great designer story, contact the editorial desk

webdesigner@imagine-publishing.co.uk   @WebDesignerMag

HTML5: How is it developing?

Using HTML5 to develop is a process that's on an upward path, but where is it at? Web Designer investigates
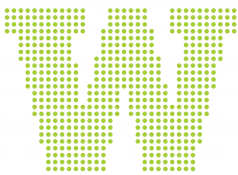
Who's top of the web development tree in 2015? We can tell you it's not HTML5, but as each year passes and the specification matures it is slowly easing itself towards top spot. Some may say very slowly, while others wonder if it will ever get here. Admittedly top spot is still a long way off (JavaScript is way ahead) but HTML5 is making strides forward.

How do we know this? Apart from the obvious interest we at **Web Designer** see on a regular basis, a new survey from industry research firm Strategy Analytics confirms HTML5's rise. So what does the survey have to tell us? According to the responses received the most obvious fact was that developers were going to support more mobile and desktop devices. Who is going to see the biggest predicted growth? You guessed it, HTML5. How much was HTML5 set to grow? An impressive 20 per cent is the figure quoted.

Sencha, the app development platform, took part in the survey with their CEO, Art Landr stating, "As developers and enterprises continue to manage the increased complexity of enterprise mobility and app development, I'm certain we'll see HTML5 continue to emerge as the core app developer technology of choice."

So what are the primary targets for the web app development? Unsurprisingly, smartphones are the device that developers want to develop for. David MacQueen, executive director, apps and media research at Strategy Analytics said, "The number of developers using HTML5 has shown a steady increase over the last few years, from 33 per cent in 2013, 35 per cent in 2014 and now up to 39 per cent." He also went on to say, "Increasing fragmentation in mobile devices and consumer demand for consistent app availability across multiple platforms are key drivers behind the shift in developer sentiment towards using the HTML standard.

"The biggest jump is in the number of developers using HTML5 as their primary web technology for mobile development, which has seen a sharp rise. The 2013 and 2014 surveys both showed 7 per cent of developers using HTML5 as their primary web application development technology, but this year that doubled to 14 per cent."

As developers move towards HTML5 to build web apps, there is the distinct possibility that this may change very soon. Hybrid apps are still popular and Facebook's recently introduced library React Native may suggest what lies ahead. HTML5 will undoubtedly still have a role, but how big a part will it be?

Get Web Designer digital editions

Need to know the technologies to build web apps? Check out our latest digital special

Web Designer's latest digital additions to our burgeoning collection are **The Web Apps Handbook** and **10 Amazing Websites and How to Build Them Vol 2**. Get an insight into how to build apps with HTML, CSS and JavaScript and the popular libraries including PhoneGap.

Plus, check out **Web Design Superstars**, **225 Best Web Tools and Resources** and **Amazing Websites and How to Build them Vol 01**. How can you get your hands on a **Web Designer** digital edition? Simply head to **bit. ly/1hsGYgI** download the free **Web Designer** app and you can then find them waiting for you as an in-app purchase.

> ❝ The number of developers using HTML5 has shown a steady increase over the last few years ❞

The rise of HTML5

HTML5 is being used more and is slowly becoming the primary development technology

HTML5: Developing with

33%	35%	39%
2013	2014	2015

HTML5: Primary dev tool

7%	7%	14%
2013	2014	2015

‹design notes›

A collection of inspirational visuals

The Battlespace of Online Piracy
bit.ly/1MOI1qi

1 The central focus of the infographic is the content. All paths point to the centre immediately making it clear to the user.

2 There is liberal use of arrows and a vast web that links all parts together throughout the infographic. This instantly establishes the relationship between the different bodies involved.
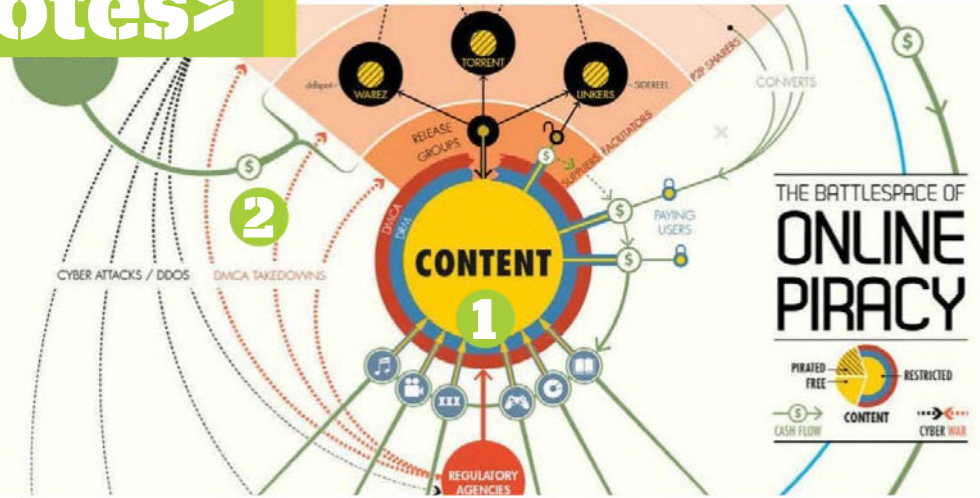
Colour picker
Hot hexidecimal codes

*
colourlovers.com/palette/3822923/*

#192E56	#20537B	#29707D	#287C69	#89C76E
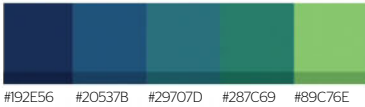
Bums
bit.ly/1W1pLx1

#B21F24	#BBD64F	#A75A54

Typesetter
The best fonts you need

ABC abc 123
Trasandina
bit.ly/1DtOmV1
A contemporary, versatile font available in nine styles and numerous weights.

ABC abc
PF Synch
bit.ly/1lkIhtx
A slab serif that performs equally well with headlines as it does with longer text.

Graphics
Great visuals to inspire

Isometric
on.be.net/1SNUsXl
A gorgeous collection of isometric icons from the very talented hand of Oleg Beresnev. This collection offers 99 icons across nine categories. Get them now.

Thememmatic
Style up your WordPress

Nine
demo.themeton.com/nine/
A theme with more than one personality, in fact it has nine of them, hence the name: nine colour schemes and nine design styles.

Sites of the month
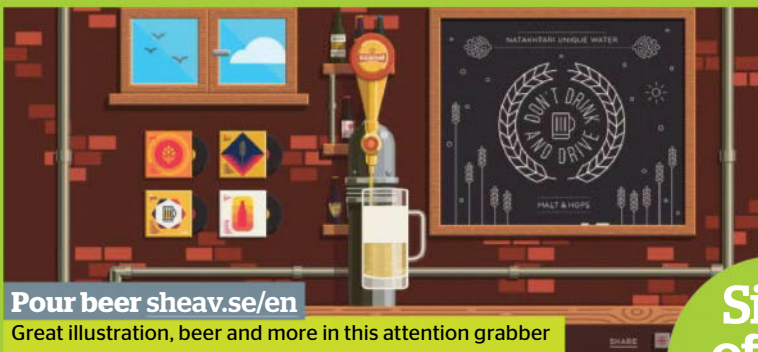
Pour beer sheav.se/en
Great illustration, beer and more in this attention grabber

NewsTech Inc. newstech.jp
Futuristic graphics and monotone ghost buttons

Blackpen blackpen.tv/language/en/
Bold typography and dogtooth patterns style this retailer

Robben Island robben-island.org.za
Clean side panels and awe-inspiring videos

‹webkit›

Discover the must-try resources that will make your site a better place
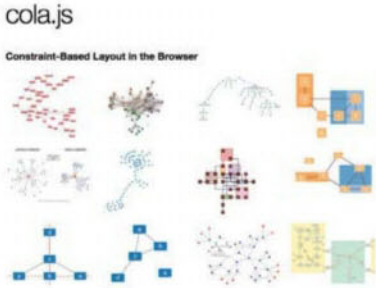
cola.js

bit.ly/1IcDuaB

An open source JS library for arranging HTML5 documents and diagrams using constraint-based optimisation techniques.

Spectacle

bit.ly/1Iu2Fok
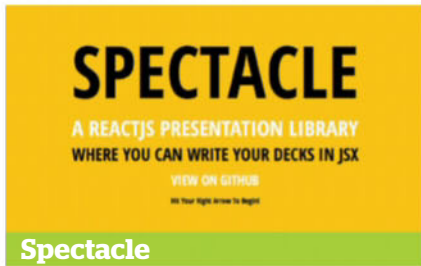
Spectable is a presentation library that is built with ReactJS. The keyboard is the prime director here with full-screen slides animating left or right.

awe.js

github.com/buildar/awe.js

HTML5 is currently king of the web, but other technologies are evolving at a rapid rate. Oculus Rift and Google Glass are just a few pushing forward the potential of augmented reality. Awe.js is a library that looks to making Augmented Web apps a quick and easy experience. What's Augmented Web you ask? Apparently, it's what comes after HTML5. In reality it uses new technologies such as WebRTC, WebGL and modern sensor APIs to bring augmented reality to the web in a form that works. As the awe.js site says "It will completely change the way you and your users see the web".

Layzr.js

bit.ly/1zdfX5o

Everyone wants their site to go faster. This JavaScript library makes sure that images only load when needed.

ClickSpark.js

bit.ly/1IkBpwM

An easy-to-configure JavaScript utility that adds beautiful particle effects to click events, and configures when to fire particle fountains.

TOP 5 Portfolio themes

Need a great-looking portfolio quick? Get a theme, get a head-start

01
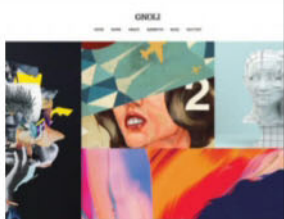
Gnoli

bit.ly/1DeU8cV

The Gnoli WordPress theme doesn't mess around, it gets straight to the point. It shows off the owner's work in a clean grid in up to four columns.

02

Alona

bit.ly/1CPsBJz

Visual appeal is the key here. A simple, slim side menu provides the navigation while the rest of the screen is dedicated to a single piece of work.

03

LineTime

bit.ly/1MBvk1T

A minimalist timeline-based theme that presents work across two columns. It includes a central image slider and an Instagram gallery.

04

Charm

bit.ly/1VRcsyY

Black and white is the perfect colour combination to give the impression of sophistication in this template. Image posts complete the picture.

05
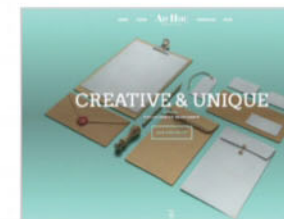
Ad Hoc

bit.ly/1DVjQy5

A one-page wonder with a great design aesthetic and a trio of portfolio style including tiles and grids, with options for both wide or boxed.

BORDERLESS COLLABORATION

Derek Samuel, a Melbourne-based designer, discusses how his international approach fuels his creativity and inspiration
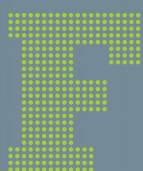
For 16 years of my career, I was based in London, working with a wide range of clients, such as Harrods, Liberty, Aveda and Diageo. When I took the decision, nine years ago, to move back to my homeland of Australia, at the back of my mind was the worry that, working only within one market and isolated from Europe and the USA, I would lose the edge and energy that had come so naturally in London.

Ten years down the line I'm delighted to say that I'm working more internationally than ever. While I do have a handful of inspiring local clients, such as Moro Olive Oil, a large part of my work involves working with brands from all over the world, in an eclectic variety of different fields. Throughout my work, communication has been key to understanding the world around me and interpreting this for a specific type of audience – both communication with the client as well as in communication with the brand audience, I would go so far as to say, communication is the key aspect to being able to work internationally.

Sometimes, this results in unprecedented 'collisions' of different skills and disciplines. For instance, from my office in Melbourne, Australia, I may be working with a photographer based in New York and an illustrator who specialises in heraldic imagery based in Bath, England.

Design can also vary greatly across industries and cultures, but I'm of the belief that a good designer can apply their skills to varied disciplines, or at least acknowledge when something is badly designed.

As we know, web design has evolved as a discipline of design, but the same basic principles apply. If the digital experience is a bad one, then that will reflect on the brand and will affect the relationship of the designer with their client. Web design is changing as it becomes more and more interactive and focused on user experience.

DEREK SAMUEL
Creative director
dereksamuel.com

Multi-award-winning creative director Derek Samuel comes from an international career of over 20 years based in New York and London, developing solutions for high-profile brands such as Liberty of London, Aveda, Harrods, Nestlé, Gillette, Diageo and Brown-Forman.

Working across continents, you can't escape the global trend for mobile and wearables. Everything that gets produced now has to be optimised for phones, tablets and recently, watches. That's obviously the result of people increasingly engaging with technology. Simply put, if your website isn't specifically designed to work seamlessly on mobile, then you're missing out.

I think it is the curation of the content that defines the experience and the ways that technology can apply that experience and be relevant to it – again, another project I recently launched for Soho Sound Studio Grand Central was **gcrs.com**, curating the commercials that they have worked on in a way that is engaging and well designed.

One project I'm particularly proud of is a web portal that I designed with Benevolent Society for Vivid Sydney, a digital interface that sourced social media and manifested itself in a dimensional light sculpture, a tunnel of lights. The graphics of this tunnel were influenced by visitors through their Instagram and Twitter feeds. The social media component made the installation into a true digital experience that could be enjoyed by visitors and those further afield.

Often my remit will extend way beyond a web designer's work. For Grand Central, again, I was briefed to create a London rooftop version of Copaccbana beach for the Rio on the Roof summer series of events in 2014. This year I have been commissioned to design the studios and public spaces for their seventh floor and will be working on the roof terraces with a garden designer.

Working in a borderless way definitely has an impact on my inspiration as well. I find that inspiration can come from anywhere and at any point in time. Designers are naturally curious people and our work is something that does not simply switch off as soon as we leave the studio. I was once working on an identity project, which was going badly. I had to catch a flight and thousands of feet up in the air I had a sudden burst of inspiration, so I immediately had to find a piece of paper to scribble my ideas on. The only material to hand was a sick bag but the design I managed to draw on it ended up being the winning concept. Sometimes stepping outside of 'normal' can be exactly what you need to unlock that nugget of creative genius.

TAKING CARE OF WEB DESIGN BUSINESS

IWDRO director Tom Sutcliffe extols the virtues of a code of conduct for digital services

Q. Taking care of business is exactly what the IWDRO (Internet & Website Development Regulatory Office) has set out to do for web design. Can you tell us exactly what it is that you do?
The IWDRO's intention is to promote a level playing field for the increasingly competitive digital services market by providing a partially regulated environment for consumers and businesses to interact. The IWDRO members commit to compliance with a code of conduct which supports professional and ethical business. This allows consumers to engage with member businesses with confidence.

Q. What are the key benefits for a business joining the IWDRO?
It generates and converts new business: membership of the IWDRO represents a commitment to best industry practice. This demonstrates to potential clients and customers that it conducts business with integrity and high professional standards. The IWDRO members have access to the highest quality new business leads vetted and qualified by industry experts. The IWDRO also provides a public online directory of all registered companies. All members receive the official membership certificate upon passing the vetting process. This accreditation ensures prospects and clients of the agencies' reliability. Members have access to legal services, offering them legal assistance and protection for the digital industry and benefit from the continued marketing strategies that have grown with us as an organisation.

Q. The IWDRO has generated over £2.3 million worth of contracts for members. What is a 'contract' and what is its typical value?
A contract (legally speaking) requires offer, acceptance, consideration (ie the budget) and an intention to create

legally binding obligations. The IWDRO 'Contract Opportunities' are leads which have been vetted and qualified and are presented to members with the information needed to complete

the four requirements and result in a legally binding commitment, usually, very quickly. Once the Contract Opportunity information has been purchased, the member can make an

offer to the client/customer which, if accepted, then creates a new contract.

Typical values range from £1,000 to £10,000 but we have budgets as high as £100,000 and more.

Q. The IWDRO recently teamed up with Excello Law, business and commercial solicitors. How did you get involved with them?
The IWDRO engaged one of Excello's commercial lawyers to assist with the legal issues arising when the concept was born a couple of years ago. The value added by this relationship went way beyond the provision of legal services and it became apparent that a good commercial lawyer thinks differently, and complements, an organisation with objectives like the IWDROs. Excello are pioneers of a new way of delivering legal services which puts the client (or customer) experience as priority. It empowers its lawyers to deliver services in a fashion customised to suit them and their clients. The sector within which the IWDRO members operate has developed rapidly and will continue to evolve as customised and flexible access to specialist professional services is critical.

Q. What benefits will your association with Excello Law bring?
Our partnership with Excello Law will provide the IWDRO members with access to commercial legal services, and experience in the digital sector at preferential rates. Legal services include commercial contracts, intellectual property matters and more. Members will be kept abreast of legal and commercial issues through newsletters. IWDRO members also benefit from Excello's involvement in applying and enforcing its code of conduct (drafted and periodically reviews). This ensures the IWDRO's membership retains its integrity as a symbol of best practice.

TOM SUTCLIFFE
Director at IWDRO and lawyer at Excello
iwdro.org

As a Director of the IWDRO. Tom's role is to promote an organisation dedicated to developing a membership of businesses committed to competing in a professional and ethical manner.

LIGHTBOX

Know a site that deserves to grace these pages? Tweet us now 🐦 **@WebDesignerMag**

PROSJEKT FANTASI

SEND INN

Morgendagens løsninger trenger morgendagens helter.
Prosjekt Fantasi er en konkurranse for barn og ungdom
som vil være med å finne opp fremtiden.
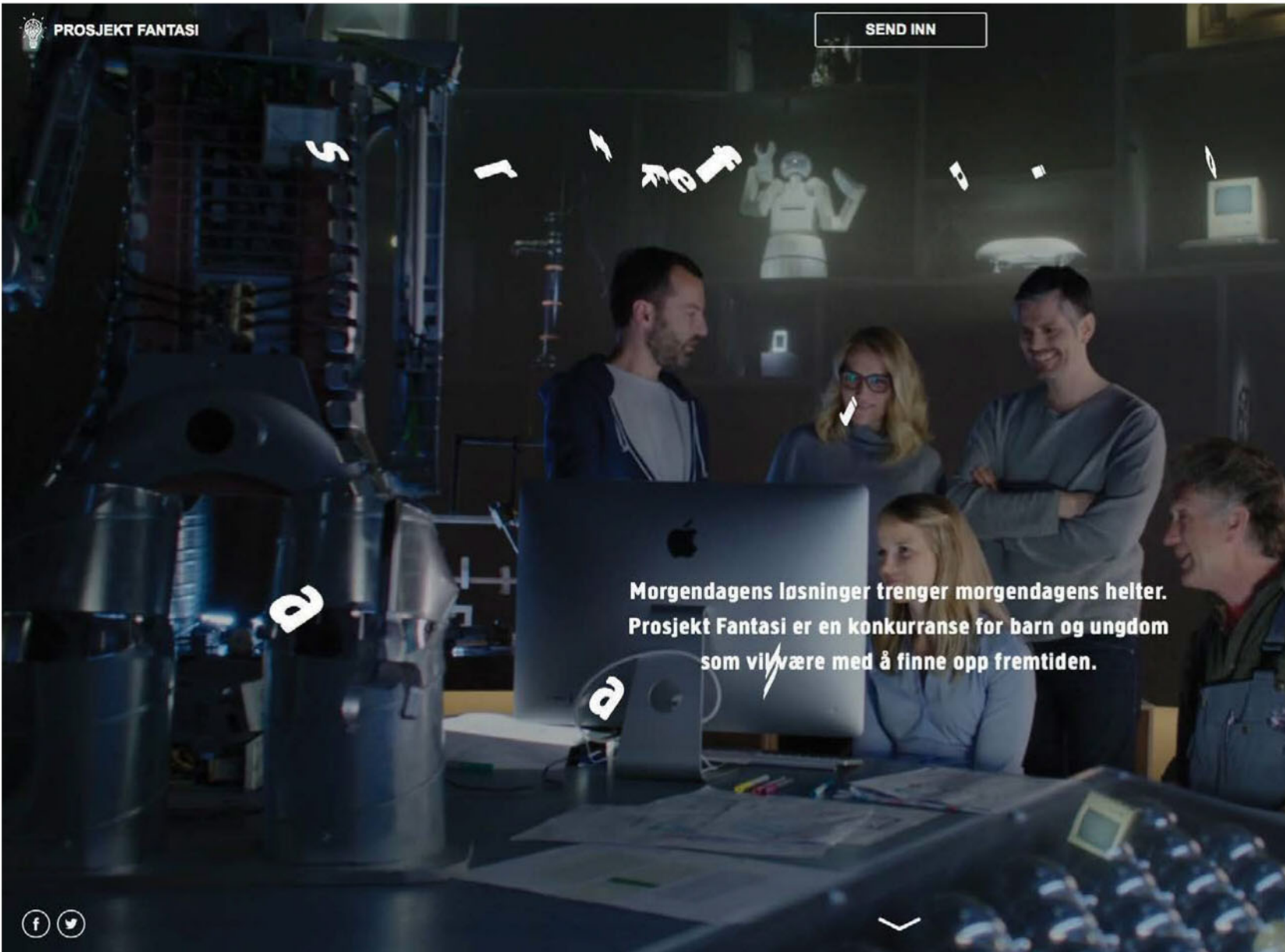
<Above>
• The opening section at the head of the main page blends
video with floating typography using CSS transforms

#F16361	#92C757	#AFAACD	#E2A8C3	#FECE3B	#68CFF3	#8E8E8E	#FAB664
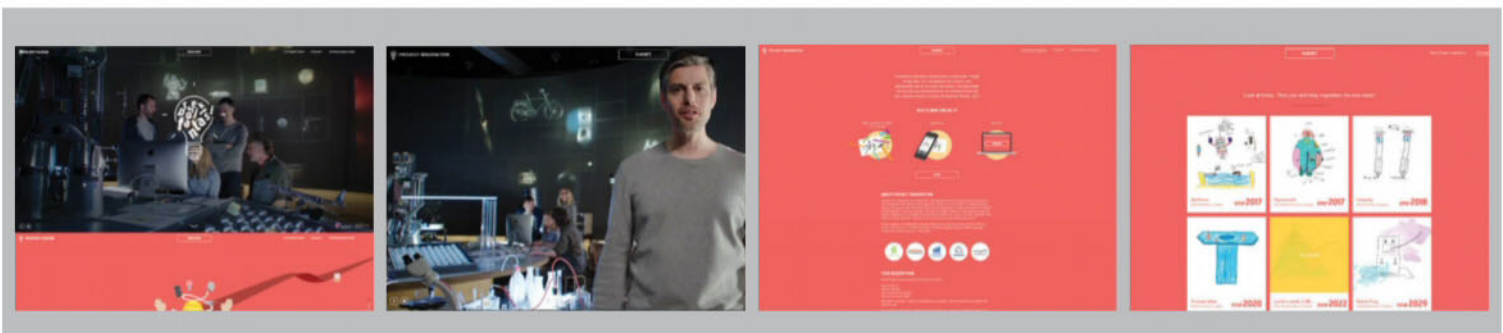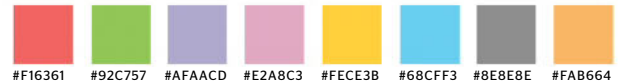
<Above>
• A lengthy page structure utilises a colourful
series of full-width slides to unfurl a collection
of historic inventions

<Above>
• A video within the main page header tells
visitors to scroll down and then enter the
competition if inspired

<Above>
• Competition rules are laid out very simply,
explaining how kids can draw, capture and send
in their entries

<Above>
• Existing entries are arranged neatly into a
gridded submissions gallery with rollover links for
viewing each project in full

Prosjekt Fantasi

prosjektfantasi.no

Development technologies Symfony 2.6.0, HTML5, CSS3, Flexbox, SVG, Modernizr, Backbone, GSAP, Browserify, CoffeeScript, Gulp

Designer **TRY/Apt:
Thomas Sømoen (developer),
Jan Kristian Haavi (designer)**

tryapt.no

The best site designs often leave you feeling inspired, this Norwegian outfit practically demands it
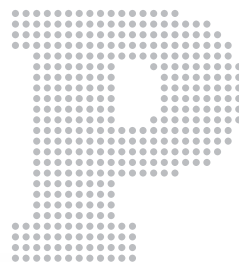
Prosjekt Fantasi is a competition site built for Norwegian audiences but its message is universal. Translated into English as 'Project Imagination', the purpose is to encourage children to dream up the next generation of imaginative innovations. The long cascading main page doubles as a timeline of notable inventions, using vibrant colour and charming illustrations to engage youthful eyes. A full-screen header video appeals directly to visitors, urging them to participate in the project and imploring them to scroll down and eventually submit their own ideas. "We wanted to create a environment that encourages the use of creativity," explains designer Jan Kristian Haavi. "Playing around with floating letters using CSS transforms, we gave it a playful and creative touch. Scrolling down the page you then go through the history of great inventions. Using PNG sprites as background images enables us to animate and bring life to each invention, with the timeline itself created using GreenSock GSAP TimelineMax." Built by Oslo's two-in-one agency TRY/Apt in association with international energy company Statoil, selected idea submissions will be built and exhibited in Norwegian science centres from October.

A 'SEND IN' or Submit button makes entering the competition a click away, all while existing examples are showcased. What's more, the site is deliberately designed to react responsively on smartphones and tablets – a crucial design feature for technologically savvy kids!

"We wanted to create a environment that encourages the use of creativity"

abcABC
1234567890
<Above>
• Creighton Pro ExtraBold by Steve Jackaman and Ashley Muir is the only custom typeface beyond system fonts used

abcABC
1234567890
<Above>
• Arial Regular handles all the subsequent page text found on Prosjekt Fantasi, keeping everything very legible

Apply CSS3 transitions and animations to HTML text

Inspired by the 'floating' typography of Prosjekt Fantasi, we look at some effective techniques for animating typography with CSS3

01 Basic page setup

Inspired by 'floaty' text effects, our example shows how to 'bounce' a <p> line of text. First we'll animate the whole phrase before looking at how each character of a string might be animated individually using JavaScript. To start, we will simply add a <p> element containing text before adding the associated CSS classes to apply text-shadow and define our animation properties.

```
001 HTML:
002 <body>
003 <div>
004 <p id="bounceTxt">BouncyText</p>
005 </div>
006 <!--Step 5 JavaScript to go here-->
007 </body>
008 CSS:
009 p {
010 color: #F39;
011 text-shadow: 3px 15px 5px rgba(0,
0, 0, 0.3);
012 }
013 #bounceTxt {
014 -webkit-animation: bounce 4s
infinite ease-in-out;
015 animation: bounce 4s infinite
ease-in-out;
016 }
```

02 Animation keyframes

Next, our keyframe classes for the bounce animation are defined as followed. Here is where we move the text upwards with a translate() transform and grow it very slightly with scale() before changing opacity too. In addition, we'll manipulate the text-shadow's position, blur size and opacity to reflect the bounce and enhance the overall effect. The first class is included for WebKit browsers such as Safari.

```
001 @-webkit-keyframes bounce {
002 60% {
003 -webkit-transform: translate(0px,
-200px) scale(1.2);
004 opacity: 0.8;
005 text-shadow: 0px 150px 20px rgba(0,
0, 0, 0.08);
006 }
007 }
008 @keyframes bounce{
```

```
009 60% {
010 -ms-transform: translate(0px,
-200px) scale(1.2);
011 transform: translate(0px, -200px)
scale(1.2);
012 opacity: 0.8;
013 text-shadow: 0px 150px 20px rgba(0,
0, 0, 0.08);
014 }
015 }
```

03 The wrapper elements

If we would prefer to animate each character rather than the whole phrase we can do so dynamically. First, in addition to our <p> class we add a new one for an <em> element. We remove its default text styling with font-style set to normal, before crucially setting the display type to inline-block so the letters follow each other horizontally. Next, change the name of the #bounceTxt class to em.bounceMe like so:

```
001 em {
002 font-style: normal;
003 display: inline-block;
004 }
005 em.bounceMe {
006 -webkit-animation: bounce 4s
infinite ease-in-out;
007 animation: bounce 4s infinite
ease-in-out;
008 }
```

04 Tag each letter

By utilising some clever JavaScript code, based on a solution by developer Neil Carpenter (neilcarpenter.com), we can now apply our animation to each character to produce a staggered, rippling effect instead. Here the text from the paragraph element is placed into a string using innerHTML. Using a For loop, each letter is 'wrapped' in <em> tags before writing the modified HTML string back into the page:

```
001 <script>
002 var myText = document.
getElementById("bounceTxt").innerHTML;
003 var wrapText = "";
004 for (i=0; i<myText.length; i++) {
005 wrapText += "<em>" + myText.
charAt(i) + "</em>";
006 }
```

```
007 document.
getElementById("bounceTxt").innerHTML =
wrapText;
007
```

05 Add some class

The second half of this code puts those dynamically added <em> elements into an array before using a function to iterate each and adding a class. By appending the bounceMe class here that calls our @ keyframes animation from Step 3, each letter is now animating independently. You can stagger the ripple effect by changing the milliseconds at the end of the setTimeout function – in this instance set at 250ms:

```
001 var myLetters = document.
getElementsByTagName("em");
002 var j = 0;
003 function applyBounce() {
004 setTimeout(function() {
005 myLetters[j].className="bounceMe";
006 j++;
007 if (j < myLetters.length) {
008 applyBounce();
009 }
010 }, 250)
011 };
012 applyBounce();
013 </script>
```

06 Save, preview, customise!

Save the page and preview in your favoured browser. By using the vendor prefixes you should find both animations work across Firefox, Chrome, Safari and IE. In both instances you should find the text floats upwards before falling, while scaling in size, fading opacity and blurring the drop shadow. You can of course add more transforms or property changes to achieve all kinds of results!

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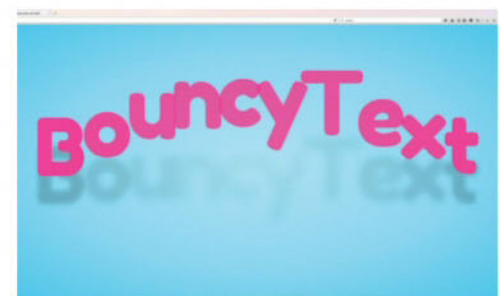
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<Above>
• An introductory montage of some of Ali's most iconic moments is served up via HTML5 Video

#AE811C	#444444	#4E4848	#D61F27	#E6E6E6	#666666	#787878	#1D1D1D	#F1E7DA	#B1841D	#5C5C5C
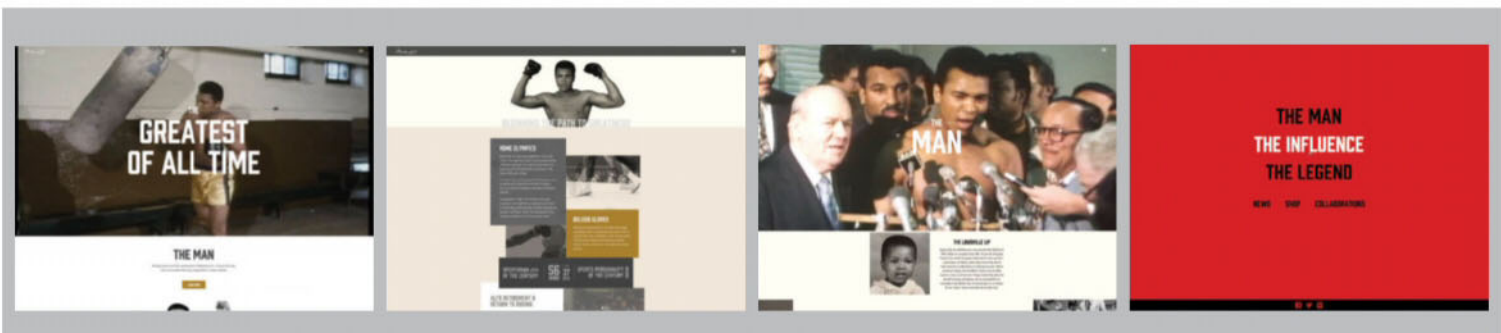
<Above>
• The main three sections pack in a wealth of Ali assets, adopting styles and layouts that provide a scrapbook feel

<Above>
• Strong factual content always brings the site back to being an authority on the man's astonishing life and career

<Above>
• Authentic Brands Group commissioned the new site to preserve Muhammad Ali's legacy, with Frank Collective chosen to build

<Above>
• Navigation is kept tidy and simple with a full-screen overlay menu offering quick access to the three main areas

Ali

muhammadali.com

Development technologies HTML5 Video, CSS3, jQuery, AngularJS, WordPress, Vimeo

FRANK COLLECTIVE INC.
CREATIVE
PROD.
NEW YORK
2011

FRANK

Designer **Frank Collective**
Authentic Brands Group (Client)
frankcollective.com

Finally The Greatest has a website that lives up to his namesake and billing
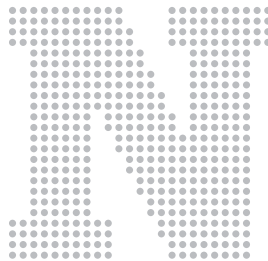
Not many people can get away with opening their own dotcom with 'The Greatest Of All Time'. This official new home for Muhammad Ali reimagines the man, the influence and the legend with enviable immersion. Commissioned by Authentic Brands Group, the New York brand development and licensing company, it was built by "brand and content shop" Frank Collective. While handling the UI, UX, website design and development duties, understandably the team's focus throughout was on preserving a formidable legacy. By combining the latest web standards with a rich collection of archive materials, video clips, images and audio, the experience would provide the 20th Century's 'Greatest' a "digital testament" befitting the 21st Century. "Such a cool opportunity to design the G.O.A.T.'s website but also a very tall order," exclaims Frank's founding partner Mike Wasilewski and featured designer on the project.

That daunting challenge then was met head-on by weaving interactive timelines packed with HTML5 Video, CSS transitions and smooth scroll-based animations. Unorthodox custom layouts provide a scrapbook-like feel, while parallax effects float bold quotes over sumptuous photography. Just as nimble as Muhammad Ali was, befitting too then that the site is equally mobile. With video switched seamlessly to stills, the responsive design keeps access to both content and Ali's own eShop consistently, well... great!

ABCABC
1234567890

<Above>
• Prohibition font by Mattox Shuler provides the blunted blocky heading text across the site in regular weighting

❝Such a cool project to design the G.O.A.T.'s website but also a very tall order!❞

Core creative rules behind the Ali site

Featured designer Mike Wasilewski of Frank Collective talks design principles

01 Tell stories with content

In approaching a new project, a key question is 'what are we trying to say and how should we do that?' With Ali, the story was an amazing individual, a great sports athlete and cultural icon still relevant today. From that concept comes an inventory of all the assets and content available, mapping out the site loosely in a content outline. Evolving over much iteration, it eventually leads to an initial site map.
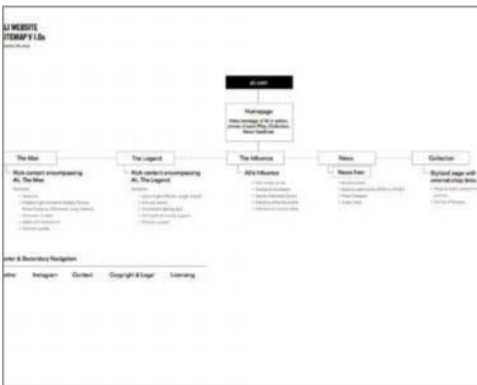
02 Remember, less is more

Having such a giant library of assets to pull from and massive amounts of content for a site like Ali is a gift, but it can almost be overwhelming as well at the same time. When you're deciding what to say and when to say it, be direct and to the point. Trim out any extraneous design elements because clear and concise visual communication tells a better story for you than having to blabber on. Sometimes having more can dilute the message.
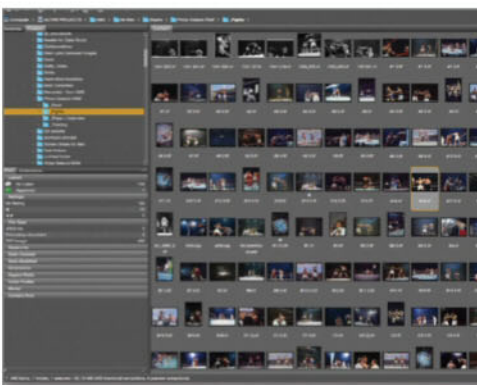
03 Direct the story flow

A captivating start to any site piques curiosity and moves people down the page. If there's nothing at the top of interest, then they aren't going to continue much further. Also, don't offer multiple interaction choices along the way when trying to tell a story. With a site like Ali, visitors expect a leaned back experience where they can scroll down the page to watch the story unfold. This led to minimal opportunities for the user to click off the page to ensure a seamless experience.
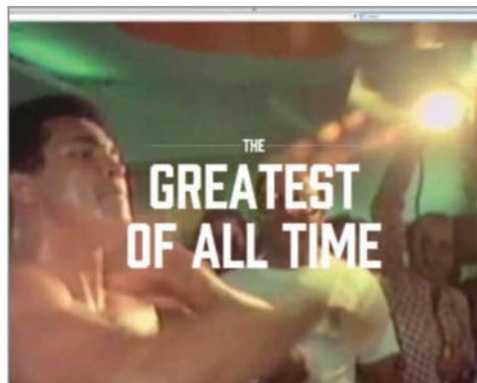
04 Strong visual communication

Once the story is carefully plotted, assets are organised and the UX solidified, the real goal is to provide clients with a strong piece of communication. Inevitably here some beautiful design work gets vetoed along the way to a final solution because while it may be amazing design, it simply doesn't say the right thing. It's all a learning process though, learning from those iterations, improving on them, and putting others in the back pocket for a rainy day.

Additional tips

Mike shares some quick design ideas and techniques the Frank Collective design team uses for practical inspiration

01 Akzidenz Bold it!

If struggling with a page layout, try putting everything into large Akzidenz Grotesk Bold headlines with everything else into a simple <body> copy style. It helps clear things up on the page and highlights what your pure, raw elements are.

02 Web design isn't print

Designing a website is like designing a poster on a piece of paper that is constantly changing sizes. Responsive and adaptive design has been a huge help here, with understanding and sticking to your grid the best way to keep yourself in check.

03 Create visual interest

Create contrast of scale, colour and movement on the page. Make your background colour a slightly lighter grey than the body. Break up large areas of text into shorter line lengths, adding video or animation sensibly to provide punch.

LIGHT🅱🅾🆇

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<Above>
• The main page intersplices video clips with stills across four rollover <div> elements, providing eye-catching navigation

#ECA331	#1E2226	#EEEEEE	#272D32	#999999	#C30C2A	#C8C8C5	#E1DFE0	#F3F3F3
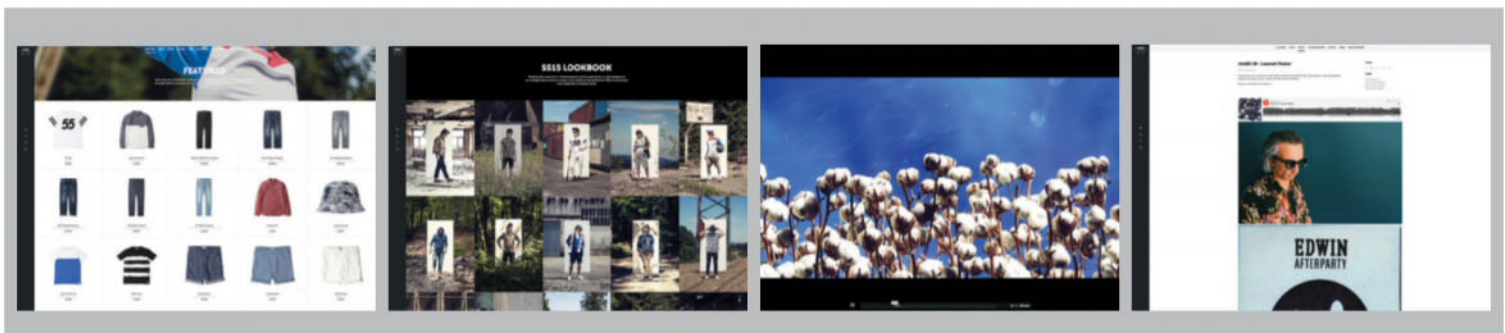
<Above>
• Collection lines are arranged in gridded form, displaying available garments with thumbnail previews and wishlist toggling

<Above>
• An imaginatively shot lookbook section models complete outfits, facilitating zooms and closer inspection via clickable tool-tip hotspots

<Above>
• Vimeo-hosted video content such as 'Blue', produced by recognised collaborators, reinforce Edwin's eclectic brand identity

<Above>
• An exclusive selection of DJ mixes known as mixED feature the likes of Laurent Pastor, embedding audio playback via SoundCloud

Edwin Europe

edwin-europe.com

Development technologies HTML5, CSS3, jQuery, mCustomScrollbar, UI Touch Punch, Modernizr, SoundCloud

Designer **Sennep**

sennep.com

Japanese denim meets London cool to deliver a sophisticated fashion brochure

Defying this distinctly European dotcom, the Edwin label originated in 1947 from a Japanese passion for denim. Built by interactive design studio Sennep, this eCommerce brochure blends trendy lookbook features and currently a 2015 Spring/Summer collection catalogue with innovative extras. Teaming up with musicians and collaborators, visitors can also enjoy art films and exclusive mixED DJ mixes powered by SoundCloud. Navigation starts intuitively from a dynamic four-panel, rollover splash page and a quick access fly-out menu. Shoppers can then move down easily to zoom in on the garments they desire, complete with 360-degree fitting guide for choosing jeans. "We focused on creating a clean design and user interface to allow customers to move through the buying process with ease," explains Barrie Bloor, associate director at Sennep. "That, paired with Edwin's carefully considered content, makes for an image-led experience. From the branded video clips on the homepage to big bold product shots providing a fantastic level of detail, the visual content is maximised within the browser. By working closely with the client to understand the customer decision process, we identified fit as a potential sticking point when making a purchase. To back up the usual measurements and product information provided we felt it important to create an interactive fit guide, to allow the customer to take control when viewing the jeans."

❝❝We focused on creating a clean design and user interface ❞❞

DENIM FIT GUIDE

abcABC
1234567890

abcABC
1234567890

abcABC
1234567890

<Above>
• Museo Sans by Jos Buivenga is featured throughout the site in 500, 700 and 900 weight varieties

LIGHT WORKSHOP

Build a fit guide with the jQuery UI slider plugin

The Sennep team describes how to create a fit guide similar to the one found on Edwin Europe

01 Set up your HTML

This example fit guide works by loading a bunch of sequential images into the browser with JavaScript. Then when the user moves the slider we show the particular image relevant to the position, so when the slider is all the way to the left we show the first image. For the purposes of this example and brevity we'll work with the jQuery UI slider plugin, although the Edwin site features a custom slider.

```
001 <body>
002 <div id="fit-guide">
003 <div id="images" data-src="images/
{i}.jpg">
004 <img src="images/1.jpg">
005 </div>
006 <div id="slider" data-total="7">
007 </div>
008 </div>
009 </body>
010
```

02 Add your images

When the DOM is ready our jQuery loads in the rest of the images. We do this by reading the total data attribute from the #slider <div> element (7) and then adding the image to the page by replacing the data attribute src on the image. For this example our images are stored within ./images/{i}.jpg where {i} is its frame number one to seven.

```
001 <script>
002 $(function () {
003 var $slider = $('#slider');
004 var $images = $('#images');
005 var total = $slider.data('total');
006 var src = $images.data('src');
007 for (var i = 2; i <= total; i++) {
008 $('<img />')
009 .prop('src', src.replace('{i}', i))
010 .hide()
011 .appendTo($images);
012 }
013 // ADD STEP3 CODE HERE
014 });
015 </script>
```

03 Set up your slider

Now we set up the jQuery UI slider instance telling it that its 'max' is the total images we got from

Step 2. Add an event listener that fires whenever the user drags the slider. Within this listener, hide all the other images and show the one image we want to see using the nth-child CSS selector combined with ui.value.

```
001 $slider
002 .slider({
003 min: 1,
004 max: total,
005 slide: function (event, ui) {
006 $('img', $images).hide();
007 $('img:nth-child('+ui.value+')',
$images).show();
008 }
009 });
010
```

04 Load images

At the moment our script isn't that smart as it doesn't check whether the images are loaded and ready to be shown to the user. In order to solve this we need to track when images are loaded, and only when they are completely loaded allow the user to slide.

05 Check the loading state

In order to keep track of loading we need to add an integer that is the total number of images loaded (var loaded). Then we add a load event listener to all the images we've added via JavaScript and when this fires we increment the loaded integer. Only then when all the images have loaded (is_loading = false) do we allow the user to slide. However, there is still a problem as a user could feasibly try to drag the slider before everything is loaded and get no interaction.

```
001 $(function () {
002 var $slider = $('#slider');
003 var $images = $('#images');
004 var total = $slider.data('total');
005 var src = $images.data('src');
006 var is_loading = true;
007 var loaded = 0;
```

```
008 for (var i = 2; i <= total; i++) {
009 $('<img />')
010 .prop('src', src.replace('{i}', i))
011 .hide()
012 .appendTo($images);
013 }
014 $('img', $images).on('load',
function () {
015 loaded++;
016 if (loaded == total) {
017 is_loading = false;
018 }
019 });
020 $slider
021 .slider({
022 min: 1,
023 max: total,
024 slide: function (event, ui) {
025 if (!is_loading) {
026 $('img', $images).hide();
027 $('img:nth-child('+ui.value+')',
$images).show();
028 }}
029 });
030 });
031
```

06 Finishing touches

So lastly we hide the dragger whilst all the images are loading with a new CSS class. It's also nice to show a progress bar for the loading, so while receiving load events from the images we update the slider to progress. Also, once all the images are loaded and ready to go we should show the dragger again and reset the progress bar.

```
001 CSS:
002 #slider.is-loading .ui-slider-
handle {
003 display: none;
004 }
005 JAVASCRIPT:
006 $(function () {
007 var $slider = $('#slider');
008 var $images = $('#images');
009 var total = $slider.data('total');
010 var src = $images.data('src');
011 var is_loading = true;
012 var loaded = 0;
013
```

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you to share this unprecedented ep[...]
phenomena th[...]

MAKING AN IMPACT

When it comes to change education is the key. Discover how
a creative collaboration are telling the story of climate change

Claude Lorius was the first scientist to
on our climate. His extraordinary life
ures. Wild-Touch and Luc Jacquet invite
c to better understand the incredible
hat affect us all.

COVER

The world is constantly changing, progress is pushing forward, but with progress comes caveats. The serious issue of climate change is one that has been ignored by some, with only the dedicated few bringing the truth to the fore. But, these dedicated few have kept bringing the facts to the table until the outcome could and cannot be ignored.

Education is often the key to making people aware of what's happening outside of their everyday world, and this is very much where the Ice & Sky project makes its mark. It wants to make people aware and therefore it's

no surprise that it has taken more than just a single agency to bring the project to life.

The project is led by the Wild-Touch Foundation, created by the film director Luc Jacquet who received an Academy Award for *March of the Penguins*. His ambition was for the Wild-Touch Foundation to be built on two pillars: making scientific knowledge accessible to all through emotion and exceptional imagery.

How would they achieve this goal? Dedication to working with renowned international scientific committees. But, how would they bring their work to the

Project	**Ice & Sky**
Web	**education.iceandsky.com**
Agency	**Source, Wild-Touch, François Pumir, Pierre Rossignol**
Web	**bit.ly/1IhtNtJ, bit.ly/1UkQmTK, bit.ly/1IhtPBS, bit.ly/1KNZZsA**
People	**Team of 7**
Time	**9 months in total**

Ice & Sky's sister film by director Luc Jacquet closed 2015's Cannes Film Festival
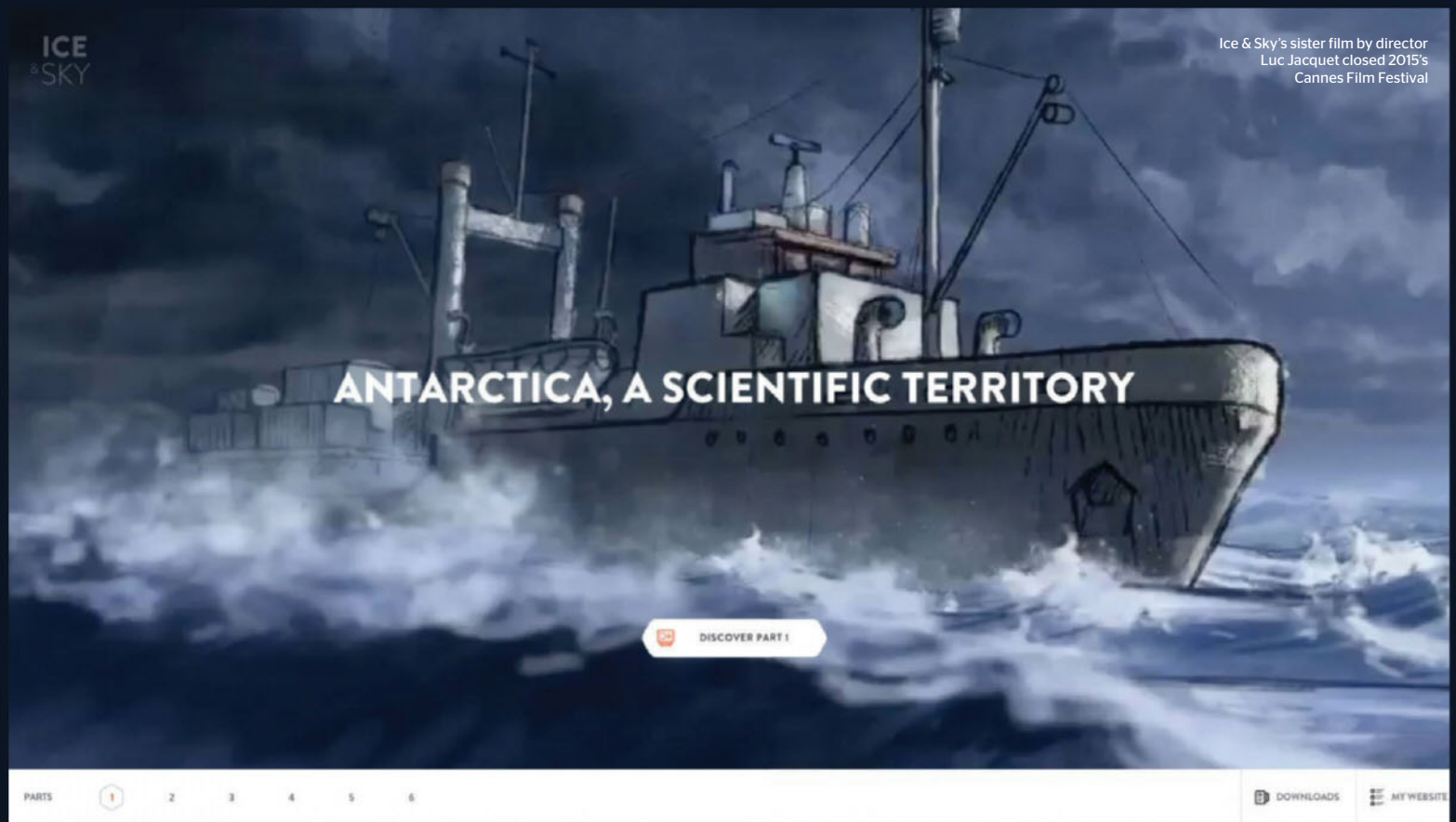
THE PEOPLE WHO MADE THE PROJECT HAPPEN

François Pumir, who has 17 years of design experience, was the key producer of Ice & Sky
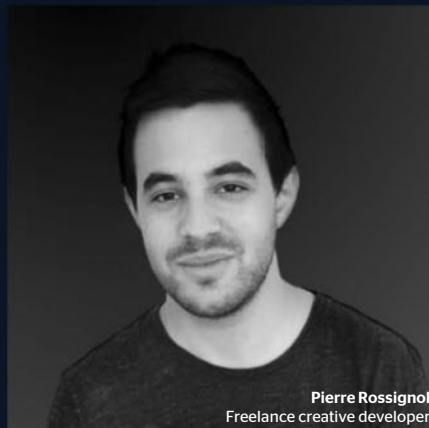
Pierre Rossignol
Freelance creative developer

Jules Bassoleil
Lead designer and cofounder of Source
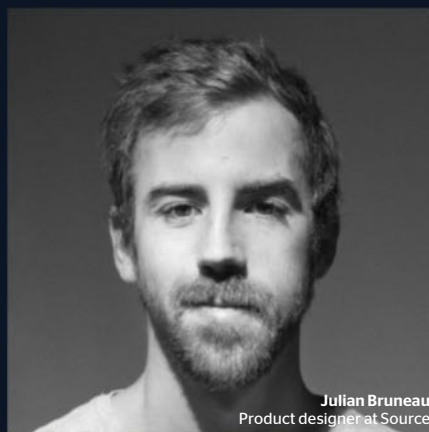
Julian Bruneau
Product designer at Source
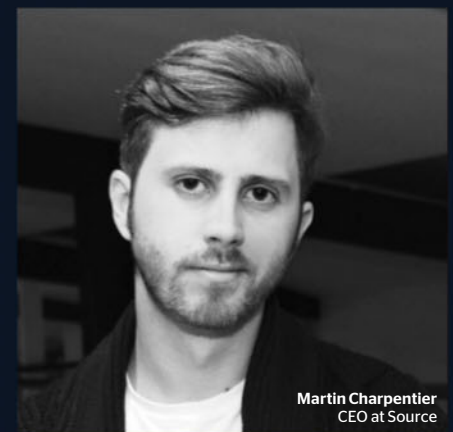
Martin Charpentier
CEO at Source

masses? Producer and designer on the project François Pumir gives an incisive insight, "To reach the public, they had to create a sensitive and universal language. To tell beautiful stories, they collaborated with various artists on various media."

These fine sentiments are no better demonstrated than via Ice & Sky. The project addresses the question of climate change and uses Claude Lorius' research as a starting point, before moving on to the greater issue of the Anthropocene, an era in which humans are the predominant driver of change.

The project is more than just an online presence – it brings with it its very own feature film by director Luc Jacquet, a collection of TV films and an educational programme. As already mentioned, education is key and the goal of its educational programme is to raise public awareness about climate change and to give educators a tool to work with.

How were the films created? Wild-Touch worked with a collection of international scientific committees, including CNRS and NASA. To show how serious the project is, it is now supported in the US by the Smithsonian Institution and in France by the CNRS.

How do you educate the masses? Tell them a story that needs to be told through beautiful imagery and quality cinematographic resources. The story of climate change has written itself, but how the story was to be presented and created was all thanks to the work of François Pumir, producer and designer for Wild-Touch: "At the beginning, we had to figure out all the content. Each story in this project led to another one and so on. The amount of content was so huge and the climate change history is quite old! Thus, we (Source and I) organised the content so as to get a big picture of all the

THE 13-PART PUZZLE

The smart thinking that takes a project from concept to the design phase can come in many forms. It may involve hours and hours of head-bashing across creative and marketing to bring the concept to life. Or, as in the case of Ice & Sky, there is a collection of assets that need to be formed into a unique, neat, crowd-pleasing product. Pumir reveals what he and the team had to work with and how they got ready for the design phase. "Wild-Touch's team had already made 13 educational films when we started to work on this project. Narrative was therefore written in those 13 parts in a cinematographic and linear way, not for a digital usage. Thus, the first idea was to create a flexible and simple framework to browse and consult all the content in an efficient way for a large audience.

"This framework was based on a few main rules, which drove the design work from the start: all parts of the site have to be seen just like in a film –

continuously – in order to figure out the story. The cinematographic material has to be displayed fullscreen to value its beauty thanks to Loic Fontimpe (storyboard-loic.com).

"Narrative has to mix different patterns (such as videos, audio and photos) to avoid being boring. Reading on each screen have to be turned to its minimum to avoid being boring again!

"Thus, each screen has to embed additional material such as PDF, videos and sounds to make a deeper level of reading.

"Each piece of content can be saved by users (such as educators) to create their own story in a very simple way (without any account creation which could have inhibited educators from using it).

"Once those rules were drawn, we found a bunch of inspiration to drive our work without making too many iterations. Once those inspirations were validated by Wild-Touch, Source's team could start to work on UX and UI."

stories, then we made different scenarios to find the best way to tell a beautiful story to a large audience.

"After getting the frame of content, the second step was dedicated to work on the UX to tell this story. We aimed to keep it as simple as it could be as we knew we were working for a large audience. Moreover, the most important part was to value the cinematographic material and to make the most accurate mediation." Pumir and team opted for a simple framework, where stories would be illustrated fullscreen and content for each would be displayed from top to bottom.

"Then a big part of this project was to make a lot of iterations on the way we were going to tell the story," Pumir continues. "Each word is important and each video was cut precisely to be inserted in the right place of the narrative. I made at least ten versions for each of part of the website to find the right way to tell this story."

A multimedia project the size of Ice & Sky was never going to be the work of a lone wolf. It was always going to be a collaborative effort, and working alongside Wild-Touch's François Pumir (amongst others) were the good people at Source. Their CEO, Martin Charpentier reveals how Source integrated themselves into the project, "Here at Source we don't see it as two separate entities which interact. We don't work for our clients but with our clients. François Pumir has taken part in the conception of Ice & Sky since the beginning and until the end. To [help it succeed], we used several deliverables adapted to each keystone of the project.

"We can split the project in three phases. The first one consisted of thinking of the website as a map, it allowed us to represent the architecture of the website by listing its pages. Also, this document helped to specify what will be within the pages in terms of interaction, content and functionality. At this early stage of the project the site map should not be considered as specification material, it's not a contractual piece but a concrete way to exchange and iterate with our client.

"After that, we build a storyboard of the website, in this kind of deliverable we dig a bit deeper in the content of each page, we use lines, blocks and spaces creating the shape of the future content.

"The storyboard has two functions, one is to clearly see the paths users can go through and it helps us (Source and the client) to choose the right content we'll need to put into each page. In many cases the content materials and the digital experience were produced together. So without digging too much into detail, the storyboard helps to define what content will be needed for each page.

"Once we built the plan of the digital experience and before giving birth to it, we needed to make static
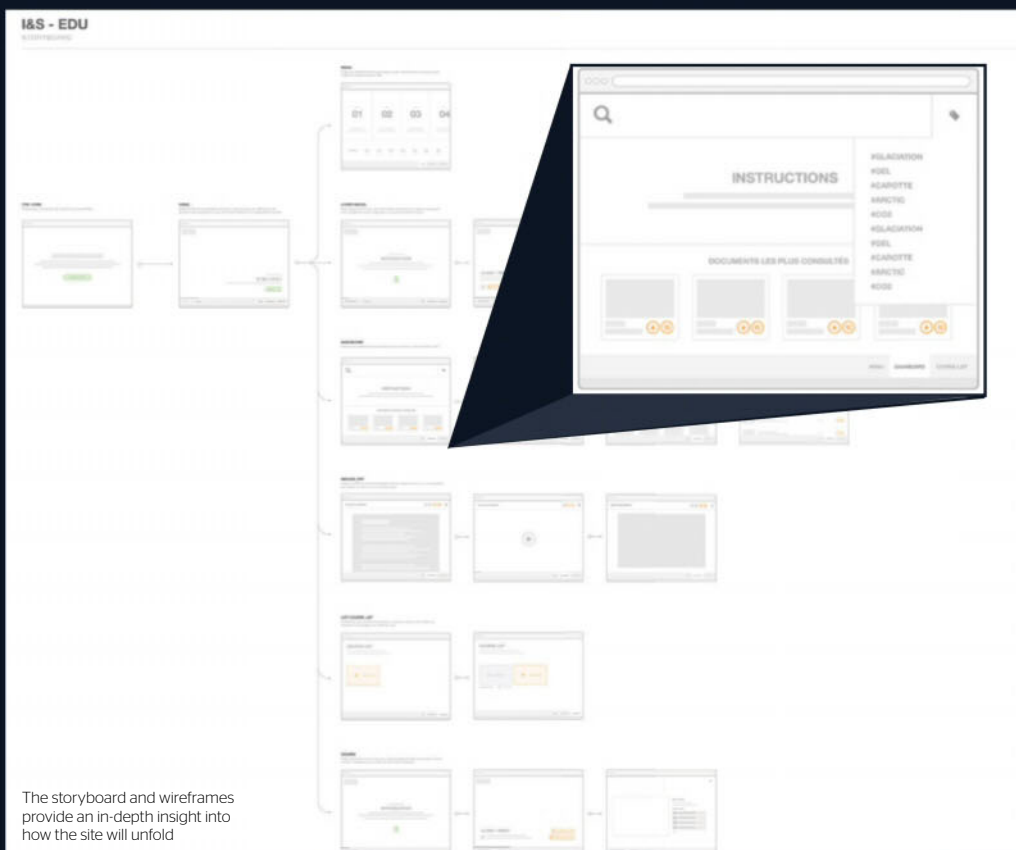
The storyboard and wireframes provide an in-depth insight into how the site will unfold

mockups and prototypes. In this phase we first focused on the UX and ergonomics aspect. Here we try and learn the different design patterns. By doing this we also strive to apply the best look and feel. Sometimes, we split it into separate tasks by building at first a selection of high-end wireframes. Our wireframes are meant to solve all interactive and ergonomics issues, allowing the UI designer to focus on his craft."

With a host of assets and initial ideas to hand, it was then time to bring in the creative thinkers to make this thought-provoking project stand out from the crowd with a host of stunning visuals and clever additions. This job was assigned to Source creative director Jules Bassoleil who quickly found inspiration for the story-telling project. "The main challenge here was to imagine a digital product able to handle different type of media such as movies, animations, audio and text. Naturally we took a look around other web documentary styles. We were very interested in Clouds over Cuba (**cloudsovercuba.com**) and The Vanishing Game (**thevanishinggame.com**) which has a very clean UI and a simple navigation system. The problem here is that this kind of experience is too linear and uses only one kind of content.

"One other very good reference is Warsaw Rising (**warsawrising.eu**), a masterpiece in terms of animation and narrative experience, it also gathers a lot of different content including some neat data visualisation.

"We needed to think about an experience to enable us to gather lots of different content while allowing the user to jump from chapter to chapter and picking up content they liked on the way. So we designed a three-layer experience, a navigation allowing users to get access to any chapter, the main container within each part and the last layer which gathers the linked documents for each chapter. By doing this, the user can easily discern the different kinds of content.

"To be compliant with our large audience, we needed to create contrast to make navigation and interactive

BUILDING AN INTUITIVE BACKEND FOR ICE & SKY

The unique visual nature of the Ice & Sky project meant that it needed a dynamic nature to complement the content. As always a project is a combination of frontend and backend and getting the balance right is critical to how the finished project engages its audience.

The man assigned with the task of bringing everything together was creative developer Pierre Rossignol. "All the content had to be dynamic and managed by an intuitive back office in order to create and update the content throughout the project. We had a complex structure of content with six main stories and multiple types of content. Every story contains a different number of screens, which contain text, video or audio.

"We built a back office based on WordPress to allow François Pumir and Wild-Touch to create the content and upload all assets easily. The back office generates a JSON file with the content for each language. Our front-end app just gets this JSON file for displaying the right content. This process had many benefits. It allowed the team to test the

content and actually see it in the real website during the development phase. Using a JSON file generated only when needed as our only source of content allowed us to have a stand-alone app and not to rely on a back office, which would fetch the content in a database each time a user comes.

"For optimisation matters we hosted all our assets on Amazon Web Services. Using a CDN was crucial regarding the number of videos we had and to provide our users a smooth user experience by reducing the loading time.

"The biggest challenges were in the frontend. We built a complex MVC JavaScript structure based on our custom framework. It was very important to have clear code conventions and keep it clean. We chose to build a one-page web app, so the navigation was a big challenge. This meant loading the content on demand. We needed to smooth every page transition so the user would still be immersed in the content all the way. We also spent a lot of time on the animations. It had to be very smooth and needed to be meaningful, not trivial, in order to give our users the best user experience and enhance the content which was our main goal."

elements attractive. For this the animations and feedback played an important role. For this reason we spent a lot of time with our mate Pierre Rossignol to make it perfectly fluid and reactive.

"As designers we don't consider that our work stops after producing a static mockup. We've conducted and advised [Pierre Rossignol] on how the animation should be until the release."

The next stage for a completed site is to get it launched to the web masses. How did such a large, all-encompassing project such as Ice & Sky reach its audience? It didn't go down a typical path as Rossignol

explains, "The project has received a huge amount of positive feedback and support since the launch, which we're very happy about. We mostly used institutional networks to promote the website.

"Actually it was quite easy to get people visiting the website as the subject speaks to everyone. People are impressed by the quality and the exhaustivity of the content they can find on the platform, and are more willing to share to their friends and networks.

"As an innovative educational platform it has been presented to the National Education Ministry here in France, which helped us reach professors.

"The professors are very excited about the My Website and Downloads features, which allow them to pick content from the platform and create their own little websites with the content they choose for their classes and to make more advanced research in the related documents.

"The project has also been presented in Washington DC and in New York by Luc Jacquet along with actress Marion Cotillard, who supports the project and lent her voice on the videos.

"Main scientific institutions involved in the project who support us include CNRS (National Center of Scientific Research), NOAA, NSF and The Smithsonian Institution who'll support the project for U.S.

"Having the support of those scientific institutions, along with Luc Jacquet and Wild-Touch promoting the whole project abroad has helped the platform reach its target audience for sure. Moreover, a huge campaign will be done with educators to hold the programme from September to the COP21 [Sustainable Innovation Forum] in Paris in November, which will be a sounding board for the project."

Collaboration was key throughout the creation of the entire Ice & Sky programme and once the project was

> **❝IT WAS QUITE EASY TO GET PEOPLE VISITING THE WEBSITE AS THE SUBJECT SPEAKS TO EVERYONE. PEOPLE ARE IMPRESSED BY THE QUALITY AND THE EXHAUSTIVITY OF THE CONTENT ❞**

The teams detail how climate change has been observed thanks to Antarctic expeditions
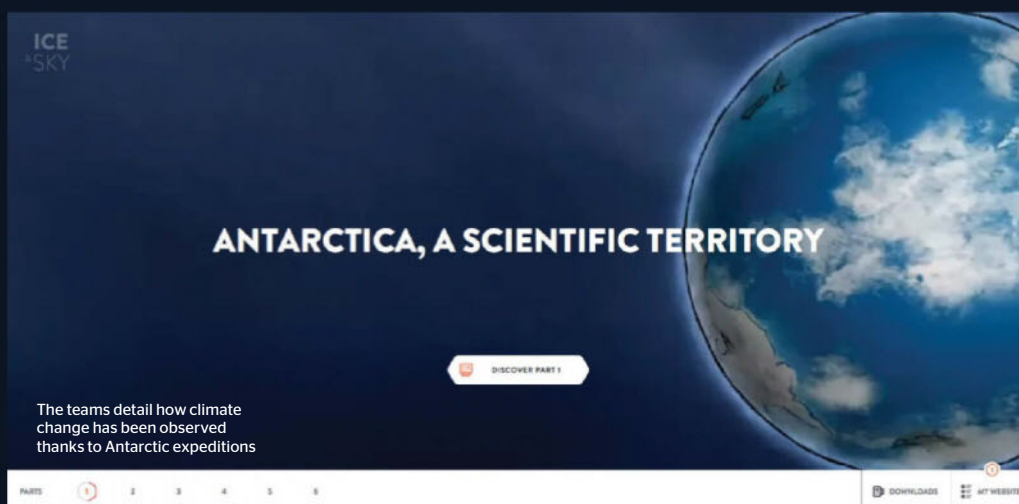
complete things didn't change drastically, meaning the agencies didn't have to go their separate ways as Source CEO Martin Charpentier reveals. "This is not our first [time working] with Wild-Touch. François, Jules and Pierre have been working together for a while, their last project was the Once Upon a Forest (**iletaituneforet-expedition.org**) project which has won many prizes including TheFWA x Adobe Cutting Edge award. So there is no particular process with Wild-Touch, it's more like a relationship based on trust and understanding. We're working like this with most of our clients, each part needs to preserve the other in terms of works, stress and financial aspect. We hope we'll keep this relation with our future clients.

"Of course Wild-Touch got the full rights to our work and the website has been developed, tested and run on Wild-Touch's own servers. For every project a little budget is provided for aftercare, but it's always difficult to specify. We're mostly working on products and not simple websites with clear and defined scopes. Products are meant to evolve and it's often what our clients ask us: to work more to refine their product.

"Before the international release we ran a few user tests, which provided us feedback on the site's weak points. So we worked to improve the site until global release. We don't really see this as aftercare but simply as a part of our duty."
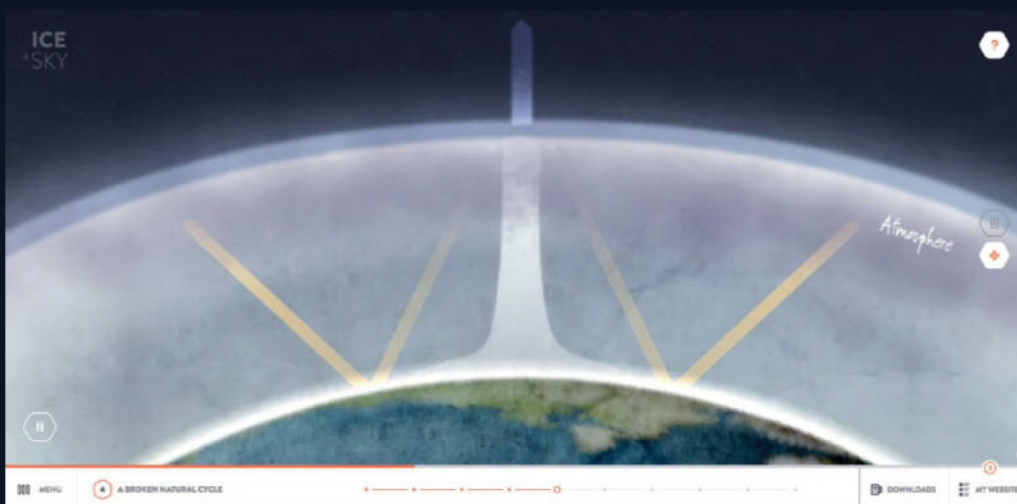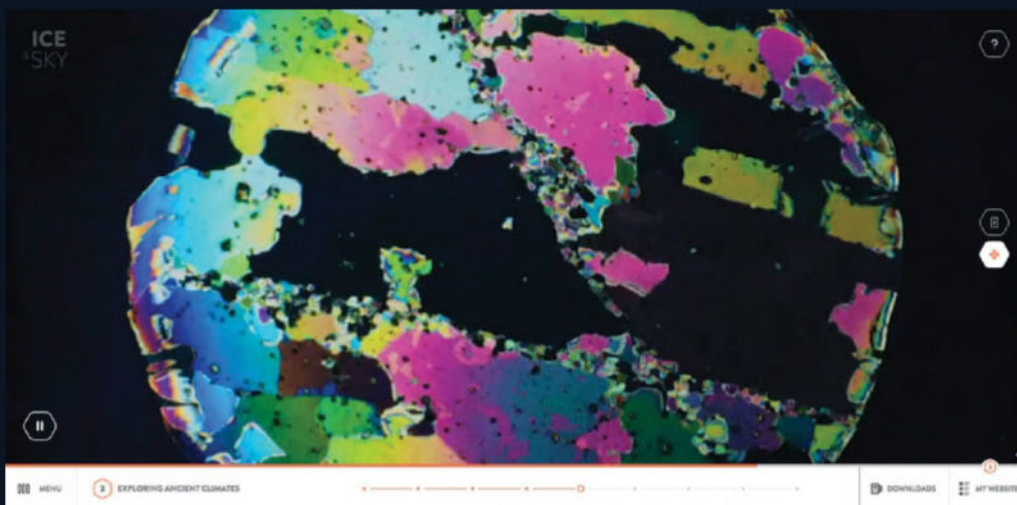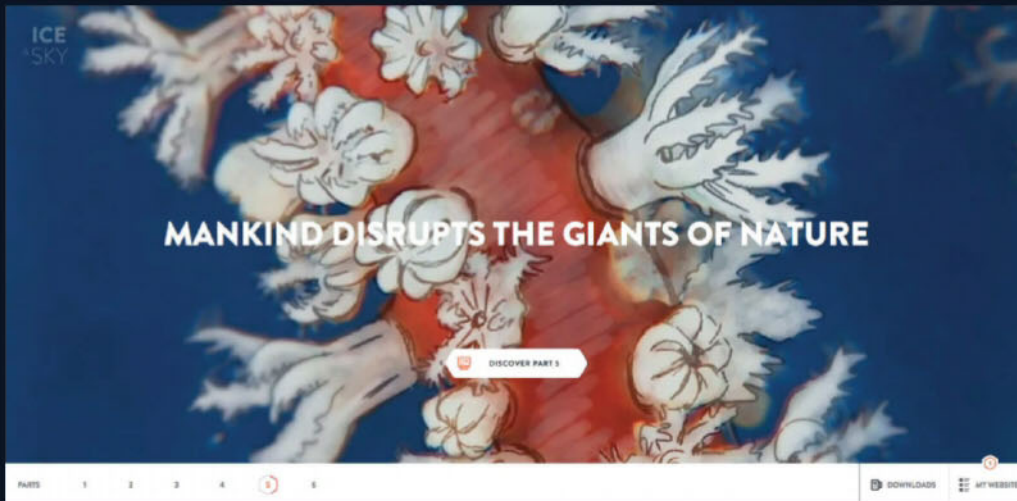
THE BIG QUESTION...

What is the one key change needed to halt climate change altogether?
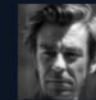
66 Since the beginning of the industrial revolution, humans have been aware of their impact on nature, but industries and short term profits – supported by politicians – enforce these laws and therefore cultures. It's now time for people's consciousness to take the lead on any other considerations if we really want to make a change to these issues. **99**

FRANÇOIS PUMIR
PRODUCER AND CONCEPTOR

66 People need to be aware of their impact on the planet and climate. Future generations will suffer the aftermath if their behaviour follows ours. So we need to educate and sensitise the generations to climate change so that they will avoid making the same mistakes as their elders. **99**

JULES BASSOLEIL
LEAD DESIGNER COFOUNDER AT SOURCE
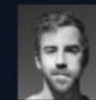
66 To me, the key is to keep talking about it in order to involve everybody, make them understand that solutions already exist and we have to act now! To have a real impact, we need to be together. **99**

JULIAN BRUNEAU
PRODUCT DESIGNER AT SOURCE

66 Climate change is not a fatality, the climate has always changed and species and human have adapted. It may not be as bad as we think but by understanding it, we'll be able to minimise and overcome its impact on our lives. If we need to change our bad habits, then we should embrace it. **99**

MARTIN CHARPENTIER
CEO AT SOURCE

amaze

BREAKING BOUNDARIES

Born out of academia with the aim to explore the impact of digital on learning and communication, Amaze has been at the forefront of digital design for the last two decades and leads with a skill spectrum that makes it a true pioneer

A maze was established in 1995, out of the Learning Methods Unit of John Moores University, Liverpool – with a global scope, Amaze has developed to become not only one of the world's leading digital design agencies, but also a consultancy that looks closely at how human behaviour, branding and the digital landscape integrate together.

CEO Natalie Gross explains: "Founded by the late digital media luminary Roy Stringer, and led by him and Peter Fowler, the unit was originally formed to explore the effects of digital and emerging new media in the way people learn and communicate.

"Amaze was born at the very dawning of the World Wide Web. It recognised the power of the new multimedia, the convergence of computing and design; it understood how images on a screen could sit side by side with narratives. It recognised, immediately, that a new form of communication was being born and that this would impact on information, on learning, on understanding and on business too."

With a basis of learning and understanding, naming the new company was vital to get right. "The name Amaze does have a deeper meaning,"

who Amaze
what A leading, full-service digital marketing, technology and commerce consultancy. Born 20 years ago inside the Learning Methods Unit of John Moores University, Liverpool
where Royalty House, 72-74 Dean Street, London, W1D 3SG
web amaze.com

Key clients

The Co-operative Group
Virgin Trains East Coast
Toyota
Lexus
ASICS

amaze

said Natalie. "In the early years Roy Stringer had taken the idea of Theseus, in which a maze was the central feature (usually referred to as a labyrinth in the Greek story). [He then] used it, as an extension of the noun, an imperative (Amaze Me!) that seemed to chime in exactly with Stringer's presentation of the work to outsiders. Amaze was established in 1995 in the very early days of the internet, and this meant domains weren't quite as difficult to get hold of as they are today."

Getting a presence on the web right was a priority when Amaze was founded and continues to evolve as the agency expands its client base. As Paul Musgrave, creative director at Amaze comments: "As most digital agencies will agree, getting the chance to concentrate on their own site is very challenging, and because of that, it is often the last one to change. Although our own site is important to showcase our expertise, our core focus is always first and foremost on client work. We are currently in the process of creating a new

company website – a testament to our original mantra: 'To inspire original thinking through a deeper understanding of technology and human behaviour. We set ourselves a challenge to express some of that mantra through our new brand mark, which has been born from technology and is literally fed by human behaviour. It follows in our tradition of making creative use of web technologies, in this case WebGL, which is how we render our living logo to the screen."

Paul continued: "We are using motion detectors to 'see' the ebb and flow of people through our offices. We've set up network sensors to measure our consumption of digital content. Other sensors

watch the trends in consumer interaction with our technology, and active avatars measure activity in our social spaces. All of this harvests data, which then manifests itself in three dimensions and forms part of our living brand mark. It's an exciting and interactive part of the new website."

Over the last two decades, Amaze has developed its skills and consultancy services. Has the company developed an ethos that can be defined? Natalie continued: "We pride ourselves on developing long-term relationships with our clients, accompanying them on their digital journey and supporting their ongoing business needs and challenges, rather than just working with clients on

> **"Although our own site is important to showcase our expertise, our core focus is always first and foremost our client work"**

ASICS

asicsamerica.com

Amaze was appointed by true sports performance brand ASICS to deliver a global eCommerce solution. Our main objective was to assist the corporation by launching its first ever direct-to-consumer channel. We were selected on account of our ability to combine market-leading technology with strategic, technical, creative and brand insights.

We worked with ASICS as strategic digital advisors across technical, brand, creative and global implementation for the whole project. As part of this remit we worked in partnership with ASICS's global HQ and their key regions – Japan, USA, Europe and Australia – to deliver a global eCommerce solution that is scalable and is already successfully delivering to multiple brands that are owned by the ASICS Corporation.

After our initial consultation to select and then architect a technical framework, Amaze began, at an immense pace, to develop the ASICS hybris eCommerce platform. It has been configured using hybris eCommerce accelerators with local integration hubs, templates and merchandising services.

Beyond rolling out the global network of sites, our remit is to manage a continuous enhancement programme for the organisation. As a brand, ASICS is fragmented across multiple markets, categories and target audiences meaning the programme needs to
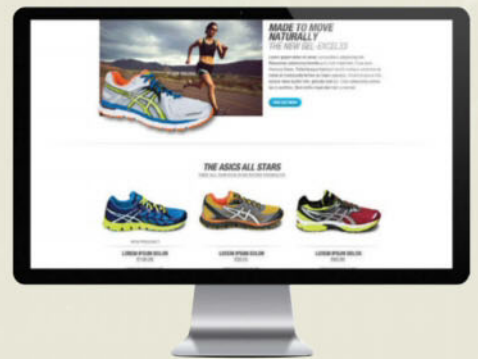
be carefully considered for each market. Whilst the US operation favours a focus on three to four key sports, Japan operates across an overwhelming range of categories operated by multiple business units.

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a project-by-project basis. Our partnership with Lexus, for example, dates back to 2004. Since then, Lexus Europe has grown to span 32 countries operating in 26 languages, all serviced by a single European hub website with language sites across mobile, tablet and desktop.

"The Lexus account works across a wide range of our differing agency services, from digital strategy through to UX, creative, design and build, as well as implementing and managing its digital brand and marketing developments, product campaigns and CMS integrations.

"Once Amaze launched the site for Lexus, we then provided them with a dedicated team who are responsible for the rollout of a central solution to sites across Europe. The rollout team supplies project implementation and management, content administration, training and support to each individual country marketing department and their third-party agencies.

"Where possible, we also look to push the

industry insight

Natalie Gross, CEO

" Social channels are at their most effective when they are used to interact and talk with people. Relationships are two-way and revolve around shared experiences and conversation. The most successful brands are those that realise this and shape perception, rather than leave it to chance. When used smartly, social platforms help us understand what motivates and demotivates people "

With long-standing relationships with clients, it's no surprise that Amaze assigns several of their key teams to work on the same projects over the years

TIMELINE

Number of employees 10

1995

Amaze is established via the Learning Methods Unit of John Moores University, Liverpool.

Number of employees 70

2000

Amaze's first online community for VW is the second largest youth site in Germany.

Number of employees 100

2002

Amaze's first pan-continental projects requires diverse solutions across 46 markets.

2010

Unilever is Amaze's first global account.

Number of employees 200

2012

Amaze is responsible for transitioning ASICS's business to a global direct-to-consumer sales model.

20 amaze

Number of employees 250

2015

Amaze celebrates its 20th birthday.

boundaries and encourage our clients to use the latest or emerging technologies too. Our work with Lexus and Oculus Rift (OR) for instance, was started when OR was in its very infancy and when Lexus was set to launch its new NX: an SUV crossover. The NX looked to target a new, highly sophisticated, tech and design-savvy audience and we were tasked with capturing their attention."

As Matt Clarke, chief technology officer at Amaze, explains: "Our solution was to blend computer-generated imagery (CGI) and OR technology to develop two highly immersive experiences that would allow customers to virtually test drive and configure the new NX, before the car was physically available in showrooms. This, along with the other complementary experiences we developed, was rolled out across the UK and Europe and used the very latest DK2 OR Headsets. [That was] the first time CGI, rather than film-based imagery had been used with the DK2 headsets and the launch was also the first time the industry had seen a mass rollout of the new HD devices.

"More recently, we have developed a new virtual-reality driving and racing experience as part of the launch of the new RC F model. The experiences include a pioneering 360-degree video, accessible with an OR headset, as well as via an immersive mobile app, which can be further enhanced into 3D with Google Cardboard."

As some of the projects that Amaze has developed have been over long periods of time, how does the agency approach their working practices? "No one project is the same – so it is very dependent on the complexity of the client requirements," says Matt. "Typically we would assign teams covering strategy, creative, technical, project and account management plus our digital comms (SEO, CRM and social) and data teams. For many of our clients we work with our digital operations services team ensuring ongoing digital governance and support across different markets around the globe."

Amaze, simply because of its long history, has been able to witness first-hand how digital tools have developed over the last two decades. "Whilst HTML5 and CSS3 are our base, front-end technologies, we work on a number of frameworks including jQuery, AngularJS, various Google code libraries and open source code libraries and frameworks," Matt continued. "We concentrate on utilising the best emerging frameworks and developing the best front-end architecture. We are

also seeing the evolution of a back-end framework, which is crucial for all back-end technologies. We see that responsive design is the way forward for mobile web and for app development. For native app development we tend to use generic frameworks such as PhoneGap."

Clearly one of the most impactful developments over recent years has been the rise of social media. For Amaze, social networks have become a fertile resource that much of their design services are based upon, as Natalie outlines: "Social channels are at their most effective when they are used to interact and talk with people. Relationships are two-way and revolve around shared experiences and conversation. The most successful brands are those that realise this and shape perception, rather than leave it to chance. When used smartly, social

"By influencing behaviour (beyond simply asking someone to click on a link) people will investigate things further and... complete their own journey themselves"

platforms help us understand what motivates and demotivates people: how they feel, how they act and how they behave.

"Of course, it's not all just about websites. It's also about a channel or application allowing people to complete their objectives. That's why business objectives, aligned with customer objectives, are vital. By influencing behaviour (beyond simply asking someone to click on a link) people will investigate things further and eventually complete their own journey for themselves."

Few agencies have the breadth of experience that Amaze can call upon. How has Amaze approached its recruitment process, and has this changed as Amaze evolved? "Our expectations for a new employee in any discipline are centred around three key areas: hard skills, soft skills and business acumen," said Natalie. "Basic technical knowledge, which we consider as a 'hard skill' is absolutely vital to get the job done, while personal qualities or 'soft skills' are essential for anyone to be successful in the industry: for instance, do they take initiative? Are they inquisitive?

"For anyone looking to enter the digital industry today, they have the chance to change the rules and that's a tremendously exciting opportunity to have. We are in an era of true digital transformation, and the people joining our industry have the opportunity to be part of this.

"In terms of advice, it would have to be: stick to what you are passionate about, keep asking

questions about what's coming next and look to discover how these relate to true business goals and challenges."

And what does the future hold for Amaze? Natalie concludes: "This year Amaze turns 20, and we're proud to celebrate two decades of digital innovation. It's been another strong year and we continue to grow globally, as well as develop our commerce practice and service offering, with data intelligence and digital innovation [in particular].

"The launch of Loop Integration – a joint venture between Amaze and systems integrator Contiigo in Chicago – has also seen us expand into new markets something which is only set to increase. Loop is a digital commerce consultancy which specialises in the hybris product suite. The development of our new proposition, Amaze One, a joint venture between St Ives companies Amaze and Occam DM, launched in January 2015. Amaze One is a new breed of customer engagement agency [that works alongside] a seamless mix of data and digital marketing expertise to deliver innovative CRM campaigns for brands. The business looks to handle CRM differently, turning each aspect of every customer interaction into information that creates value for consumers and clients' businesses.

These are just two examples of how Amaze is diversifying, with many more to follow. Here's to 20 more years!

amaze

WEB...amaze.com
FOUNDERS..............Roy Stringer and Peter Fowler
YEAR FOUNDED...1995
LOCATION...............................London, Manchester, Liverpool, Chicago

SERVICES

> Strategy and innovation
> Global design and build
> Commerce
> Digital operations services
> Data intelligence

FASTER BUILDS WITH CUSTOM CODE

HTML & CSS PATTERNS

HARNESS THE POWER OF DESIGN PATTERNS AND IMPROVE THE QUALITY OF YOUR PROJECTS

DESIGN PATTERNS DO...

• Help to standardise your code

When writing code to a defined pattern it is easier to maintain consistency, even across a large-scale project. This consistency is vital as it enables you to be confident about the quality and stability of your solution. Well-structured code is much easier to test, debug and fix, for example a pattern that separates data, logic and presentation enables each area to be tested independently. This means that any issues within a code solution can be identified and eradicated with very little debugging effort. As you gain experience in working with standardised approaches and patterns, you will also find that estimating projects becomes more accurate.

• Provide consistent UI behaviours

When considering the user experience of a digital interface you will be thinking of patterns without even realising it. Every user holds a certain level of expectation for the behaviours or steps through a user journey. These expectations are generally based on repetition and in turn help us to establish standards over time. There is not one UI pattern that suits all cases, but by ensuring that a platform does not switch between patterns, your users will not get confused. This is really important to design and build digital products that not only work but work well for users.

• Enable reuse and maintainability

It is very easy to solely concentrate on the exact requirements and agreed functionality you have defined with a client. In doing so you can be certain that you will design and build something that your client is very happy with, making the project a success. However, what happens when your client changes their mind or you are requested to extend or adapt some functionality as part of a subsequent project? This can incur a lot of refactoring or code rewrites, but by coding with patterns you can cater for future extensibility and build something you are happy with.

DESIGN PATTERNS DON'T...

• Consist of a suite of code snippets

Code snippets provide reusable functionality that is already tested and proven within other projects, stopping us from writing the same or similar solutions time and again. Design patterns provide us with a structure to work within, a set of rules if you like, that help to make consistent decisions when writing code. Code snippets themselves can fit within a range of patterns and when considering larger reuseable sections of code, you should bear in mind how these fit with any patterns you may be working with. Don't expect a design pattern to provide you with answers, it will instead give you the means to find the answers more efficiently.

• Negate the need for user testing

When thinking about UI patterns, we are generally making sure that any journeys or interactions are considered and based on proven approaches we know users understand and expect. Therefore, it is easy to assume that our platform is fine for users without any form of user testing. This is a risky assumption to make, users across different demographics, industries and even in differing environments can and will expect differing behaviours. Even if you are building a solution for users you have built for previously, it is important to remember that these user experience standards have evolved over time and will continue to do so.

• Provide one approach for all projects

The use of design patterns span from providing an overarching structure to an application to more granular patterns for small decoupled pieces of functionality. Most projects encompass a range of design patterns, separated by UI and functional, and one pattern may contain other smaller patterns. For example AngularJS is based on an MVC application pattern which separates your Model, View and Controller, however your controller can contain more granular JavaScript patterns such as Constructor or Modular.

Diverse patterns

Due to the range of design patterns, there isn't one master pattern that can be defined or found. This a good thing, because if this wasn't the case, coding could get boring very quickly.

WHAT CAN PATTERNS DO FOR YOU?

You may think that design patterns don't apply to me or my work, they are only relevant to people who work on large-scale projects or sizable development teams. However it is very rare, even if you actually are working alone, that you only work with your own code, and that's because design patterns are in use with pretty much every piece of open source code that we will find ourselves using. If these technologies and frameworks had not been produced with core underlying design patterns then they would be extremely difficult to work with, understand and maintain. In short a plugin or framework with no design pattern will not have much longevity within the community.

Even if you are building in isolation, with no use of other open source code, it is likely you will need to come back to your code at some point in the future. We have all experienced code that was written some time ago

and noticed some core underlying differences when comparing it to how we write code today.

If we consider design patterns when we write our code, the problems of technical debt in our code will not cost us nearly as much time when we come back to it one or two years later down the line. These problems can be largely eradicated by understanding the design patterns and approaches that were used, making it much easier for us to get back into developing within an old code solution.

If you do tend to work with other developers, design patterns can be a useful means to communicate how an application has been built or even how it is planned to be built. This can really save some time in getting multiple people up to speed on working within the same project, yet still maintain consistency and ensure stability within the final product.

66 *Design patterns can be a useful means to communicate how an application has been built or even how it is planned to be built* 99

Madebymany.github.io/css-patterns is just one pattern library available on GitHub

> **"** Design patterns have been around for a long time. Realising how we have already been using them and then taking advantage of the consistency they can provide is essential in building modern web applications. **"**
>
> **Luke Guppy**
> Frontend director

THE DIFFERENT PATTERN TYPES

UI patterns
These are common design solutions to functional interfaces. They are predominantly defined by understanding our users and their interface expectations and interpretations. We provide the most efficient way for a user to complete a task or provide multiple ways to get the same result.

Persuasive patterns
These leverage content to persuade the user to take a specific journey or make the decision we want. This could be achieved by reinforcing a product's quality using social proof or creating empathy for a cause. They're particularly powerful in eCommerce as they bring emotion into a user's decision-making process.

JavaScript patterns
Within front-end development, JavaScript provides complex functionality, and this means that the benefits to be found with using design patterns are far more obvious. JavaScript pattens help to break down your scripts into smaller more manageable pieces.

Application patterns
Application builds that run predominantly within the browser are now prevalent across the web. They enable almost instant feedback and to achieve this, a number of MV* patterns have been adopted by app frameworks. These provide much-needed separation of concerns.

THE BENEFITS OF UI PATTERNS

The main benefit to using design patterns when building user interfaces is that they ensure you take advantage of tried and tested solutions to common design problems. More often than not there will be a range of established approaches to choose from and in making this decision make sure you assume nothing about your users. Only with a good understanding of your user's goals and expectations can you be sure of building the best solution. UI patterns define more than just interactive elements. Arguably the most important aspect is clear visual communication to users – this is achieved through common, recognisable iconography. A good simple example is the humble external link icon, using this sets the expectation that you will be leaving the site, therefore avoiding the issue of confusing the user when they only find this out after using the link. Confusion makes users feel uncomfortable, and when uncomfortable they will tend to exit the user journey you have set out for them.

Common UI problems
There are so many UI problems we solve all the time. Reusing these approaches is probably the simplest form of design pattern, as we all do this as part of the design-and-build process as standard.

• Form validation
We have all experienced error messages on forms that either seem to be displayed too late, in the wrong location or are in odd groups, and not all at once. The things you will need to consider are: positioning of error messages, alongside the relevant field is the most common user expectation; timing of messages – so don't validate fields before the user has finished editing them and decide whether it is best to validate one at a time, whether in groups or altogether; and don't wait for the user to submit the form before revalidating any changes – make sure the messages are clear and concise.

• Searching and filtering
When you have a lot of information for a user to view, consider whether they need to get to something specific as quickly as possible, or if they need to explore and curate the data. If the former then the user will expect to be given all the tools to run an extensive search straight away. Otherwise it can be daunting for a user if you ask them too many questions at the start of an exploratory journey. In this case you will find that simpler search tools followed by additional filter options alongside will prove more successful.

Responsive patterns
Adjusting layouts across screen sizes and providing clear interactions for both mouse and touch inputs make responsive patterns essential. The two main aspects of responsive builds that benefit from well-defined patterns are layouts and navigation.

> **"** Confusion makes users feel uncomfortable, and when uncomfortable they will tend to exit the user journey you have set out for them **"**

WHAT ARE PERSUASIVE DESIGN PATTERNS? READ ON

Persuasive design has been used successfully within advertising and marketing for years. Loss aversion is probably the most common form and this is based on the premise that people prefer to avoid losing something than gaining something, for example just look at sales or deals that have a limited time period.

Pride

What you have to do to appeal to a user's sense of pride is simply reinforce a decision that has been made, and you can do this reinforcing through your social media content. You can also make use of imagery to position a product or service within an aspirational setting.

Empathy

Using content which gradually builds up empathy can be a useful pattern when the key objective is to gain donations from users. To succeed in using empathy, it is vital to establish this emotion prior to asking for any commitment from the user.

• Layout patterns

Two good examples of layout patterns, and probably the most common, are 'fluid to stack' and 'column drop'. There are a huge amount of patterns in use and in most projects a range of patterns will be needed to support the range of information required by the platform.

The 'fluid to stack' pattern relies on a fluid grid which scales down with the screen and requires the content of each column to scale down with it. A breakpoint is then defined to stack all columns when appropriate.

The 'column drop' requires less reduction in scale of column contents but uses more breakpoints: one to stack each column (from the right) below the other columns when the width is limited.

• Navigation patterns

Providing clear functionality on smaller screens is a problem solveable by navigation patterns. Any solution will be partly dependent on the amount and size of the navigation links. The most common solution is a 'toggle menu', when the navigation links no longer fit across the screen, they are replaced with a menu which, when clicked, slides down the links from the top of the screen. From a visual aspect it is also common to use the 'burger' icon to represent a menu link.

Another solution which was adopted and popularised by the Facebook app, is a 'slide-left menu'. This behaves in a similar fashion but slides the page to the right and menu in from the left. This approach often incorporates swipe gestures to hide and show the menu. When it comes to multilevel navigation solutions there are still a wide range of approaches in use, as with many more complex interactions, it takes time for users to become accustomed to them.

The modular approach

Any responsive pattern you adopt will be created with HTML and CSS, but have you ever thought about how you approach writing it? The fully modular CSS pattern removes the reliance on a specific HTML structure to achieve your responsive interface. Instead of targeting HTML elements, or relationships between them, it relies on an extensive range of CSS classes which can be applied to any element. Each class must have a specific purpose and usually only consists of a few properties.

These classes can be grouped to achieve the desired layouts across screen sizes. This approach requires a lot of planning and consideration upfront. It can be difficult to define all the required CSS declarations, and it is tempting to breach the pattern for a quick solution. But, your CSS can become very confusing. This approach is relied upon by responsive frameworks, such as Bootstrap – they've done the hard work for you and have established a definitive, well-defined range of modular classes for building responsive sites.

Maintaining your HTML

A modular CSS pattern does come with its own drawbacks. To support a full website build the CSS will be extensive, and in assigning separate classes for a desired feature they will litter your markup. If you take a fully modular approach, avoid adjusting the effect of classes based on their position within your HTML. If you do start to overrule properties in this way, you can quickly lose the benefits of the modular system

altogether and leave future development as mainly guess work. If you are precious about maintaining clean HTML within your projects but want to use modular CSS you can separate your modular CSS files from your HTML structure-based declarations and bring them together with a CSS precompiler. It would be advisable to refrain from overruling modular classes – start with your modular CSS and when it needs adjusting move it to your main CSS files. This gives you confidence that any modular declarations will have the build effect you expect.

Stick to your guns

Once you have decided on the design patterns that you have set the boundaries and rules for, try to avoid any temptation to deviate from these design patterns for any short term gains.

EVOLUTION OF USER EXPECTATION

There are standard approaches that we all find ourselves building time and again, these are tried and tested UI solutions that users are familiar with. It is vital to ensure that with any interactions or journeys, the user can understand the functionality and process with very little effort. This ensures that users are comfortable and feel in control, nobody likes to feel they don't know how to do something.

These approaches, although tried and tested, do not last forever. Advances in technology can change how we think about interactions. Take the transition from the humble desktop mouse to touchscreens as an example, users used to expect hover states and click events, now they expect the ability to swipe, pinch and rotate – and all this with an indication force and velocity expected too.

It is not only technology that changes users' expectations of an interface, on mobile devices trends are set by the implementation of both iOS and Android interfaces. Many solutions and visual cues accepted across the internet today as standard were first seen with these mobile operating systems.

Facebook is another key player in the evolution of user interaction, any software application that covers such a broad range of users has the inherent influence to change the way we build.

• 'Fluid to stack'

Uses a fluid grid with the content scaling down on smaller screens

• 'Column drop'

Uses more breakpoints to stack columns below other columns

TAKE CONTROL WITH FRONT-END PATTERNS

Technical solutions with JavaScript

It is very easy to get lost in your code and end up with an unrecognisable mess of functions, objects and variables that you know work, but you're not quite sure how. Design patterns can stop this from happening as they are proven solutions to common technical problems that give you some clear rules to adhere to when you're developing.

If you work with JavaScript libraries and frameworks you will already know many of these patterns, possibly without even realising it.

The constructor pattern

This is a very simple pattern but is essential when building a large piece of software, as it gives control over an object's structure and the creation of new instances of those objects. This ensures that you can be confident of what to expect from a given object when using it across your application. The constructor is a function that receives a defined list of arguments and extends itself with properties and/or methods based on those arguments. In JavaScript calling a function with the 'new' prefix creates an isolated instance of that object, based on the defined structure.

```
function Person(firstname,
lastname, age){
this.firstname = firstname;
this.lastname = lastname;
this.age = age;
this.fullname = firstname + " " +
lastname;
}
var bob = new
Person("Bob","Robson","27");
console.log(bob.fullname); // Bob
Robson
```

The prototype pattern

JavaScript is a prototype-based language, this means that every object is based on an original prototype. As seen in the last example the 'Person' function is the original object and 'bob' is based on this. If the original object, or any created from it, is extended using the prototype method, the same extension will be applied to any objects based on this original prototype. If you have used a polyfill to provide new methods to object types such as arrays, then these polyfills are leveraging this pattern to extend all array objects. Without the prototype pattern we wouldn't be able to use new JavaScript techniques until the browsers implemented their own solution.

```
Person.prototype.getInitials =
function(){return this.firstname.
split("")[0] + this.lastname.
split("")[0]};
bob.getInitials();
// BR
```

> **❝** *Without the prototype pattern we wouldn't be able to use new JavaScript techniques* **❞**

Structural patterns

The JavaScript patterns so far have been creational, structural patterns deal with the composition of objects and how these compositions relate to each other. Structural patterns ensure that objects can be related and when one is changed this change is realised across the platform. This enables us to manage object-based code in small chunks and be confident that extending or adapting one composition will not unexpectedly impact the rest of our application.

Behavioural patterns

These patterns are concerned with the communication between objects across our platform. When we want one object to affect another in a defined manner, these patterns come into their own. A good example would be the Observer pattern, this consists of an object to hold and maintain a list of other objects as an array. This array can then be given functionality to compare, change and notify specific listed subjects or even all of them. This pattern can be useful when building listed data items that can affect one other, for example a league table or leaderboard.

Application patterns

These are very popular in web development today, also known as MV* patterns as they provide us with a host of JavaS-cript application frameworks including Angular, Knockout, Ember and Backbone. They separate the concerns of different sections of an application, making these distinct sections independently testable, interchangeable and reuseable. There are three different MV* patterns, MVC, MVVM and MVP, all three separate presentation (our HTML), data (the information held within our application) and logic (our functional code). This gives us great flexibility on how we can build and also lets us create much larger scale software solutions in JavaScript with ease.

From a UI perspective these patterns, and in turn any frameworks that use them, have given us two-way binding of data within our interfaces. This gives users instant responses to their actions and has therefore really influenced web applications of today.

Start off simple

If you are new to working with design patterns then the list of approaches can be daunting. Start off simple and use patterns for real coding problems before moving on to the next one.

JavaScript syntax

All JavaScript patterns to this point have been concerned with what our code is actually doing and how it is doing it. Patterns within your code syntax are equally beneficial for large-scale projects, these would constitute a set of rules outlining anything from capitalisation of namespaces to where and when variables, public or private, are declared. By defining clear guidance on your syntax structure, other developers will find it much quicker to familiarise themselves with any code.

🐦 FIVE TWITTER ACCOUNTS TO FOLLOW

Addy Osmani
@addyosmani
An engineer at Google, creator of Yeoman and leading voice in all things JavaScript, open web tooling and web application. Addy is currently working on Polymer and is also the author of the excellent book *JavaScript Design Patterns*.

Brad Frost
@brad_frost
An extremely experienced and well-respected web design/developer and consultant with some great insights into UI designs and patterns. Brad has worked on some excellent web tools and resources like Pattern Lab (patternlab.io).

JavaScript Live
@JavaScriptDaily
This is a great Twitter account for keeping up to date with the latest community news, events in the industry as well as approaches, techniques and framework. Make sure you sign up to their email newsletter so you never have to miss a thing!

John Resig
@jeresig
One of the creators of jQuery and an expert in all things JavaScript (including being the author of *Pro JavaScript Techniques*), John is an essential expert to follow. He has been working with and sharing his thoughts on design patterns for years.

Henrik Joreteg
@HenrikJoreteg
The president of &yet, confere JavaScript developer and creator of Ampersand-JS. Henrik has some great ideas about how applications can be built to truly benefit people in general. He also provides updates for his latest shipping releases.

6 PATTERN FRAMEWORKS YOU NEED TO KNOW

Bootstrap / getbootstrap.com
A wealth of tried and tested UI components based on a modular CSS pattern.
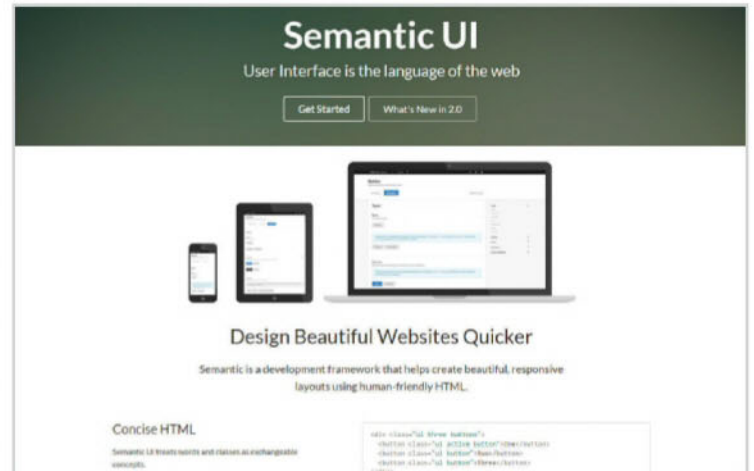
Semantic UI / semantic-ui.com
This responsive UI framework uses semantic, easy-to-interpret language.

Kendo UI / telerik.com/kendo-ui
Benefit from a wide gamut of UI and app patterns with this extensive toolset.

Angular JS / angularjs.org
Arguably the MVC application framework of choice in web development today.
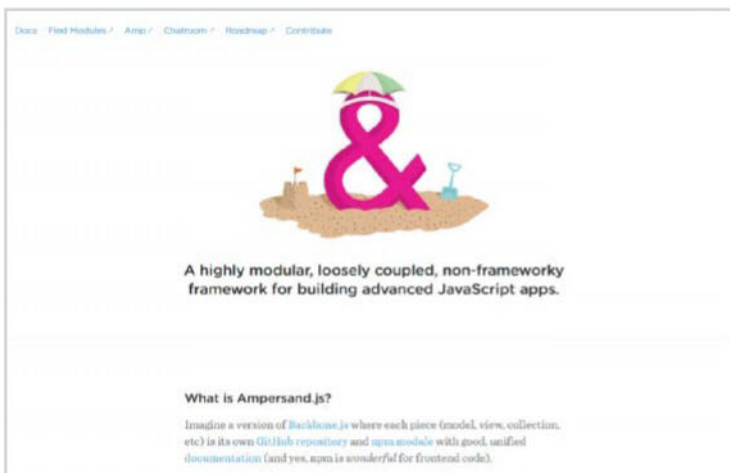
Ampersand JS / ampersandjs.com
A fully modular JavaScript development approach, uses exactly what you need.

Knockout JS / knockoutjs.com
An MVVM data-binding framework, separate your data from your presentation.

DEFINE YOUR OWN DESIGN PATTERNS

Where to start

Start with the problem, a design pattern should be created for no good reason. You must have a problem that doesn't already have an established solution. To ascertain if there are already solutions out there, you need to review other patterns that may suffice. This could even mean trying some code out before making a decision. A new pattern without a distinctly different purpose will just crowd the landscape and make it more difficult for others to make informed decisions for any of their problems.

Once you have concluded that there are not any sufficient patterns that solve your problem, break the problem down into as small a piece as possible. Then you can consider if and how these small separate concerns may need to relate or communicate with each other. A good way of visualising this is by simply sketching out this structure. Each part of your pattern should be able to be independently tested and as you have broken your problem down you may find some smaller, existing design patterns solve some of your smaller problems. Again ensure that you reuse approaches if possible.

Communicate

Don't leave your design pattern in your head, it is no use to anyone left in there. When you go through the process of trying to find a suitable design pattern or patterns, you will begin to appreciate how important good communication of a pattern is. Firstly outline the problem you are solving, then list any existing patterns

that may have come close to solving it. This helps others to make a faster decision, if you have already gone through a review of other possible solutions why not share that information?

Now clearly define the rules or scope of the pattern, be sure to include what your pattern isn't for as well as what it is. These rules can be a simple bulleted list of do's and don'ts. Then provide a good, but simple example of your pattern's usage, with more complex patterns you may need more than one example. If your pattern encompasses a range of smaller ones, it may be worth documenting it in that way.

Collaborate

Once you have created a pattern and are happy with its structure, purpose and usage release it into the wild. This can be achieved by selecting a small group of colleagues or peers and asking them to review and question your solution and decisions.

No pattern or framework that has fully established itself in today's landscape came about by one person alone. You cannot afford to be too precious about it, but do remember that if any decisions come down to opinion, the final say is yours because you own it. You will find that over time and with good quality feedback, your pattern will gradually develop into something transferable to other projects and developers, which is the core purpose for it anyway. Collective wisdom is so much more powerful than that of the individual, collaborate with your peers and challenge others to really interrogate your pattern.

Taking critique

This process may be difficult, as it isn't easy to see your own creations come under such scrutiny, but by doing so you will be confident in the reliance and suitability of the end product.

REMEMBER TO KEEP THINGS CREATIVE

It is possible to take the use of design patterns too far, you can become too reliant on them and find yourself producing the same solutions over and over again. Technology and people change, therefore both what impossible and what is expected changes. This means that a proven solution may become old-fashioned and if you have become heavily reliant on it you could quickly fall behind.

Good efficient production is essential within a web development project, but writing code is a creative discipline. Remember there will always be more than one way to solve any UI or technical problem. We all need to keep our minds open to different approaches, techniques and new design patterns – it is our collective responsibility as developers to shape the digital landscape we are all part of.

One of the best ways to do this is through collaboration, this can be discussing approaches and techniques with colleagues, or taking the time to read blogs, review new ideas and follow key players on Twitter.

Even if you see a very small failing in a pattern, or have just the beginnings of a new idea, by enlisting the help of others we will be able to get to the 'best' solutions quickly and move on to the next big problem.

If we repeat too many aspects of our builds it will tend to stifle our own creativity and we would risk the web becoming a very monotonous place.

> **" Clearly define the rules or scope of the pattern, be sure to include what your pattern isn't for as well as what it is "**

RESOURCES

UX Pin
uxpin.com
A great resource of UX insight and a host of free eBooks including *Web UI Design Patterns*.

tuts+
code.tutsplus.com
An expansive repository of training material including an introduction to JavaScript design patterns.

JavaScript Jabber
devchat.tv/js-jabber
A weekly podcast covering all things JavaScript. A good source of what is new in JS development.

EXPERT ADVICE: 9 TIPS AND TOOLS FROM THE PROS

1 **Tabs to accordions** Content that's displayed in a group of tabs in your desktop layout can be easily switched to use an accordion when the viewport becomes narrower. This way the content stays nicely structured and it remains useable as well.

2 **Column dropping** You may have a grid with a certain number of elements on each row. Use media queries to reduce the number of elements on each row as the user's viewport becomes narrower, and allow the content inside each block to remain consistent.

3 **Shifting labels** Labels are often sat next to their respective inputs when the viewport is wide enough. When you lose space, sit them directly above their inputs. The relationship between field and label is maintained and precious screen space is saved.

4 **Accessibility** This is an aspect of web development which is easy to overlook. With any UI pattern be sure to consider the semantics of your markup and the context given. Testing your platform with screen readers is useful because you can validate how accessible the platform is.

5 **Usability** Usability is at the heart of any user interface pattern, but remember that this will evolve over time as users and technologies change. Also bear in mind how useable an interface is when you are developing applications that may have lots of data to represent.

6 **Security** When working with behavioural design patterns you will predominantly be concerned with the communication between parts of your application. Any communication of data must always be properly secured ensuring the safety of users' data within your platform.

7 **Photoshop CC** adobe.ly/1OMTGU5 With the introduction of artboards to Photoshop CC 2015, it is now simpler to represent multiple layouts, states and behaviours within one single PSD file. This function is most effective when you need to communicate a responsive pattern with colleagues and clients.

8 **Jasmine** jasmine.github.io This is a behaviour-driven testing framework for your JavaScript builds. It does not require a DOM or other JavaScript frameworks. When combining JavaScript patterns and building large-scale applications, a good testing tool is vital to maintain and ensure the stability of your code.

9 **InVision** invisionapp.com This is an online, interactive web prototyping tool, which enables you to quickly visualise possible UI patterns and collaborate with others in finalising solutions. You can even collaborate in real-time, get direct comments and feedback, and sync your files with version histories available.

Ash Robbins
Lead frontend developer at Redweb

JavaScript Design Patterns
oreil.ly/1zeoTpz
A comprehensive read covering a huge range of JavaScript design patterns, their uses and flaws.

CSS Secrets
oreil.ly/1IJz4M9
A book by Lea Verou, really useful for getting to grips with modern CSS techniques.

User Testing
usertesting.com
An online system for getting your new design patterns user tested and getting real world feedback.

Make an interactive 3D game with WebGL

Learn how to make a Simon Says game with sounds and animation using WebGL and three.js

R etro games hold nostalgic appeal to people who remember playing them. Games themselves are often used as a way to engage an audience, just think about how many games there are that are used in marketing to try and sell the user something. These are not highly original games, but tap into the audience and spin the game with graphics that make it appropriate for the content. Learning to code games in the modern browser is therefore an important discipline to learn.

In this tutorial the game being created is the old Simon Says game, which was a nostalgic Seventies plastic toy. The perfect choice for this is the three.js library because it can load models, has a Tween Engine and a raycasting system that enables interaction. The game consists of storing the computer's choices and then checking what the user presses to ensure they are following the same pattern as the computer. Along the way we'll highlight the buttons pressed and play appropriate sounds. The game could be made better by spinning the model faster the longer the game goes on or by speeding up the selections; there's plenty to explore beyond the tutorial.

1. Get into the code
From the project files open the Start folder and then open the game.html in a code editor such as Brackets. The code contains the basic CSS and HTML layout and loads the 3D model. Find line 163 in the code and uncomment the line shown here. This calls the animate loop, which hasn't been created yet.

```
animate();
```

2. Uncomment the event handlers
Just below the previous code you will see comments that are similar to the lines of code shown here. Remove those comments. These listen for events such as the

browser resizing or the mouse being pressed and call the appropriate functions, which will be created as we continue writing the code.

```
container.addEventListener( 'mousedown',
onDocumentMouseDown, false );
window.addEventListener( 'resize',
onWindowResized, false );
camera.lookAt( scene.position );
onWindowResized( null );
```

3. Write your own
Now all code that will be added will be done just before line 184 for the rest of the tutorial. Here the function is created and fired when the Play button is pressed. It hides the title screen, starts to play some speech audio and then calls 'begin' after a delay of almost a second.

```
function ready(){
info.classList.add("hide");
simon.play();
tmr=setTimeout(function () {begin()}, 950);
}
```

4. Game end
The next function clears the timer that has triggered this function for the end of the game and all that the next line does is remove the CSS class of hide from the div tag with the id of 'info'. This essentially shows the title screen again and hides the game in the background.

```
function end(){
clearTimeout(tmr);
info.classList.remove("hide");
}
```

5. Begin the game
Now the begin function (called from Step 3) is created and this clears the values of any variables ready for the

start of the game. The compSelect array is the computer selection of sequence colours; userSelect is the same for the player. Other variables are fairly self-explanatory.

```
var menu = f.select("#menu"),
function begin(){
clearTimeout(tmr);
compSelect = [];
userSelect = [];
turn = 0;
goes = 0;
running = false;
incr = 0;
gameOver = false;
}
```

6. Resize the screen
Now the browser screen resizing is handled so that the camera perspective is updated if the screen changes. The pressing of the mouse button is handled, the mouse position on the x and y axis is stored and a ray is fired into the scene to see the models below the mouse.

```
function onWindowResized( event ) {
renderer.setSize( window.innerWidth, window.innerHeight );
camera.projectionMatrix.makePerspective(
fov, window.innerWidth / window.innerHeight,
1, 1100 );
}
```

Event listeners
JavaScript is an event-driven language, which means that it listens for specific events and then fires the appropriate function when this happens, such as mouse, keyboard or browser events.
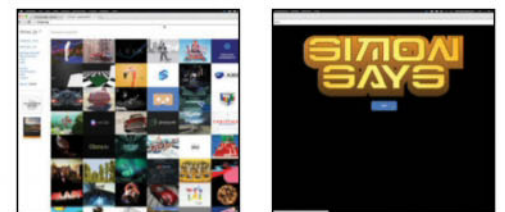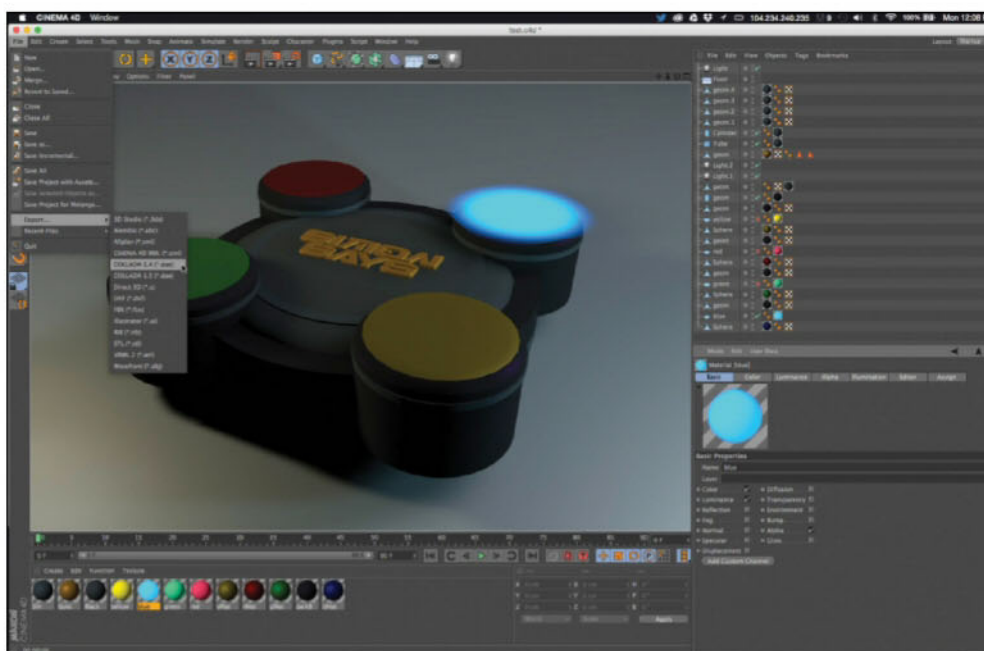
Left
The model that has been loaded is in COLLADA DAE (Digital Asset Exchange) format and has been created in Cinema 4D before exporting in the XML-based file

Top left
The WebGL scene is rendered in the browser using the threejs library (**threejs.org**), which makes creating 3D scenes relatively straightforward

Top right
The game has been started with a minimal title screen and the play button only shows up after first loading all the sounds and then the 3D model

```
function onDocumentMouseDown( event ) {
event.preventDefault();
mouse.x = ( event.clientX / window.
innerWidth ) * 2   1;
mouse.y =   ( event.clientY / window.
innerHeight ) * 2 + 1;
raycaster.setFromCamera( mouse, camera );
var intersects = raycaster.intersectObjects(
scene.children, true );
```

7. When the user clicks

Once the ray has detected what models in the scene lie below the mouse when it's clicked, an array of models is brought back. If the first object happens to be the red button then the button is made to glow, the right sound is played and the user's selection is stored in their array.

```
if ( intersects.length > 0 && turn == 1) {
INTERSECTED = intersects[ 0 ].object;
if (INTERSECTED.parent.name=="red"){
userSelect.push("red");
r.opacity = 1;
redSnd.play();
redAnim.start();
}
if (INTERSECTED.parent.name=="blue"){
userSelect.push
("blue");
```

Callbacks

RequestAnimationFrame() will request that your animation function is called before the browser performs the next repaint. The number of callbacks is usually 60 times per second.

8. Other colours

In much the same way as in the previous step, the blue and green buttons on the Simon Says interface are detected. The opacity increase is the highlight and when the animation is called to start, this fades it back out again using the Tween library.

9. Final button

As before, the yellow button is detected to see if the user has pushed this. The code below checks the user's selection against the computer's selection and if they don't match up then a mistake has been made. The 'game over' variable is set to true if the mistake is made.

```
if (INTERSECTED.parent.name=="yellow"){
userSelect.push("yellow");
y.opacity = 1;
yellowSnd.play();
yellowAnim.start(); }
var c = userSelect.length-1;
if (userSelect[c]!=compSelect[c]){
gameOver = true; }
```

10. End of the user's turn

The code here detects how many times the user has clicked a selection. If the user has clicked more times than the current amount of guesses needs, then the user's turn is over and it is handed back to the computer. If the game is over then appropriate functions and sounds are called.

```
if (userSelect.length > goes &&
gameOver==false){
goes++;
incr=0;
tmr=setTimeout(function () {turnOver(0)},
1200);
} else if (gameOver==true){
```

```
over.play();
incr=2;
tmr=setTimeout(function () {end()}, 700);
```

11. Finish the mouse event

The final brackets close off the mouse event and if the mouse hasn't detected an object under it then the array is set to null. After this the animate function is created. This calls itself in a continuous loop using the browser's built-in request animation frame. The render function is called to display the screen.

12. Each frame of the game

On every frame of the game the render function updates the models on the screen and checks the game logic. The first thing to do is rotate the Simon Says toy model. It then detects if it's the computer's first turn and if it is, it calls a function to select a new colour in the game.

```
function render() {
model.rotation.y += 0.001;
if (turn == 0 && compSelect.length < 1){
running = true;
selectNum(); }
```

13. Playback of existing selections

The code now works out if there are previous selections made by the computer and increments through each one with the showSelect function. If it's run through all of the selections then it needs to add a new one at the end, so the selectNum function is called to add a new colour.

```
if (turn == 0 && incr < goes && running ==
false){
running = true;
showSelect();
} else if(turn==0 && incr == goes &&
running == false){
```


Top left
When the user clicks on a button on the interface it responds by highlighting, then fading out the light while playing a sound for that button

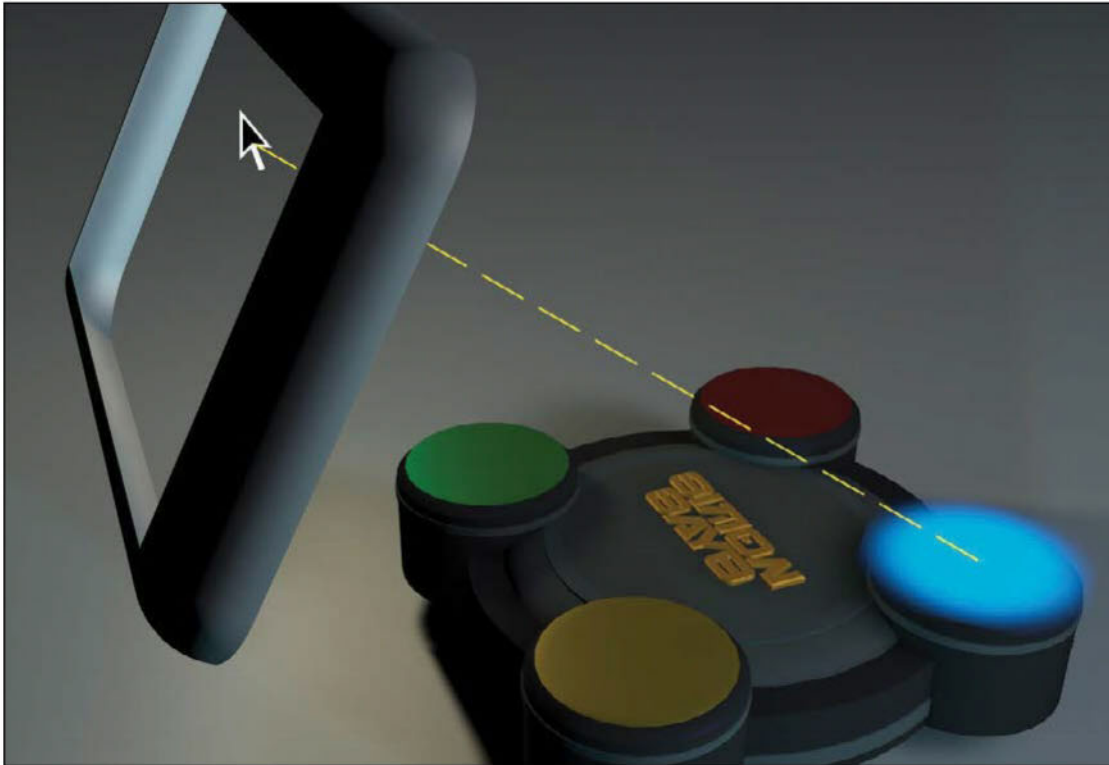**Top right**
On the computer's turn a random number is created to select the new colour in the sequence

Right
The computer replays its previous selections so that the player can try to remember the sequence before adding a new selection to this

What is raycasting?

An important concept when creating interaction in 3D spaces is that of raycasting. When the user clicks the screen it is a 2D flat space, but it is important to find out what is in the scene below the mouse. An invisible ray of light from the camera is fired into the scene – think of it as a line extending from the mouse into the scene. A list or an array is returned with all the models underneath the mouse's position. The first object in an array is always at position 0. All we need to do then is check that the first object in the array is actually one of the clickable buttons on the Simon Says interface. If it is one of them, then we just have to find which one and then we will play the appropriate sound and animation that will give the user the correct feedback in the end.

```
running = true;
selectNum(); }
```

14. Select a new colour

The final lines of the render function updates the display of the screen and runs the Tween Engine. In the selectNum function a random number is generated and if that number is zero then the red colour is selected. This is updated on the screen with the animation and sound, while this selection is stored in the computer's array.

```
TWEEN.update();
renderer.render( scene, camera );}
function selectNum(){
var rnd = Math.floor(Math.random()*4);
if (rnd == 0){
compSelect.push("red");
r.opacity = 1;
redSnd.play();
redAnim.start();
```

15. Blue selection

In the same way as in the previous step if the computer randomly chooses the number of one, then the blue colour is selected. The animation and sound plays and the selection is recorded in the array 'compSelect'.

16. Green selection

Again the if statement checks the random number generated, and this time if it is 'two' the computer plays the green sounds and animation. These steps are slightly repetitive but the nature of choosing different elements means they have to be told to play.

```
} else if (rnd == 2){
compSelect.push("green");
g.opacity = 1;
greenSnd.play();
greenAnim.start();
```

17. Yellow selection

The final part to this code (available on FileSilo) doesn't need an if/else statement as it must be the final number with yellow selected. This is always the final step before handing over to the user – the user's selection array is cleared and the change function is called after a pause.

18. Set audio on change

Once the change function is called it comes the player's turn and they will have to copy the computer's selections. Here an audio file is set to play informing the player that it is their turn. After a short pause while the audio plays, the user can make selections.

19. The computers sequence

It is necessary for the computer to play back its sequence as well as select a new colour to add to the sequence. The code here is part of the loop that detects what colour the computer has selected on previous occasions and plays that back to the player.

```
} else if (compSelect[incr] == "blue"){
b.opacity = 1;
blueSnd.play();
blueAnim.start();
} else if (compSelect[incr] == "green"){
g.opacity = 1;
```

```
greenSnd.play();
greenAnim.start();
```

20. Handing over

The yellow colour is played in this code if that selection has been made previously as it is the last colour in the sequence. The incr, short for increment, variable is increased by one and then a pause is given so that the sound can play then the release function is called.

```
} else {
y.opacity = 1;
yellowSnd.play();
yellowAnim.start();
}
incr++;
tmr=setTimeout(function () {release()},
600);
}
```

21. Test the full game

The final two functions are added which release the computer from running the section. The turnover function passes in either a 1 or 0 for the user or computer to determine whose go it currently is and change them. Save this now and test the game.

```
function release(){
clearTimeout(tmr);
running=false;}
function turnOver(who){
clearTimeout(tmr);
turn = who;
running=false; }
```

Build circular on-hover navigation

As seen on henge07.com/travel

Inside content
The navigation items are made as regular HTML containers, so any content type can be inserted like images.

Animation trigger
The animations on the page are triggered when the user hovers the mouse cursor over one of the navigation items.

Circular shape
The circle shape of the items is achieved by using a border radius of 100 per cent, enabling any sized circle to be made.

Navigation items
The items are regular navigation links refined to show as table cell style elements for content flow and sizing.

Container control
Each navigation item displays with a navigation container, allowing size control and location of the navigation items.

Some types of navigation are meant to be highly noticeable. In the case of the inspiration for this tutorial, it is clear that the navigation's purpose is to present itself in a way that directs the user to a specific part of the website. This type of navigation is ideal for areas of a website that different types of visitor are accessing by making it clear where the information of interest can be found.

This approach to website design can be highly useful for projects that rely on making enquiries or sales conversions from users who have never previously visited the website. In these scenarios, users who don't immediately see what they want are more likely to click on the back button, meaning that the website has failed to achieved its purpose. The consequences of these 'bounces' can be costly in terms of lost opportunities to produce conversions and actual cash expenditure. The ability to present clear options doesn't have to be restricted to multipage websites – the same concept can also be used to navigate to sections on the same page. Just use ID names for page content elements and refer to them in your navigation elements using # followed by the ID name to navigate to in the href attribute. Make sure you download the full tutorial code from FileSilo.

Keeping it simple

"The use of highly visible navigation can help to make content of all types much easier to navigate by giving users the option to avoid irrelevant content. As the area of websites and apps start to merge, this type of navigation will become more relevant to web design – especially in the area of web apps."
Leon Brown, full stack developer

<comment>
What our experts think of the site

Technique

1. Define HTML
First create the main HTML content that contains the effect's elements. We'll use a <nav> element to contain the <a> links that become the menu items. The HTML links to CSS and some JavaScript for the visual effects.

2. Adapt navigation HTML
Create a file called 'menu.js'. Our technique requires the HTML navigation items to have two span items – the first is used as the background circle and the second will contain visible content. Adapting navigation items with JavaScript means that the default HTML is good for SEO.

3. Define page basics
Create a new file called 'styles.css'. Insert the initial element formatting CSS to define the page body and navigation. This example will have the navigation set to have child content placed in the middle and display as a block element to display at full screen width.

4. Navigation Items
Page navigation items are the <a> links inside the navigation container. These display with a red border and have a bigger font size. Navigation items will animate when hovered, therefore the transition property is used to define an animation transition for an opacity of one second for later CSS states.

5. Navigation interaction
The navigation items should fade to be semitransparent when the user hovers over an item that isn't being selected. This is achieved in two stages – the first defines all navigations to have a quarter opacity, then the second stage selects the item to have full opacity.

```
nav:hover a{
opacity: 0.25;
}
nav:hover a:hover{
opacity: 1;
}
```

6. Background animation
The appearing circle animation used in the background is made from the first <span> item used as a square block refined into a circle using clip-path. Only the first <span> element has the properties applied to it to show as the animated circle when the user hovers over the nav item.

```
nav a span{
position: absolute;
display: table-cell;
vertical-align: middle;
text-align: center;
z-index: 0;
top: 0;
left: 0;
width: 100%;
height: 100%;
}
nav a span:first-child{
background: #c00;
opacity: 0.5;
transition: -webkit-clip-path 1s, -moz-clip-path 1s, clip-path 1s, border-color 1s;,
opacity 1s;
-webkit-clip-path: circle(0% at center);
-moz-clip-path: circle(0% at center);
clip-path: circle(0% at center);
}
nav a:hover span:first-child{
-webkit-clip-path: circle(30% at center);
-moz-clip-path: circle(50% at center);
clip-path: circle(50% at center);
border-color: rgba(0,0,0,0);
}
```

EXPERT ADVICE
Pay-per-click clarity
This type of navigation can be highly useful for pay-per-click campaigns that are designed to direct people to a targeted landing page. People often want to see an overview of the information and then select for themselves to see the parts that interest them, which this type of navigation can be made to provide.

Build iOS-style web applications with Framework7

Use Framework7 to put together a quick app for iOS with all the looks of native iOS but with the ease of HTML5
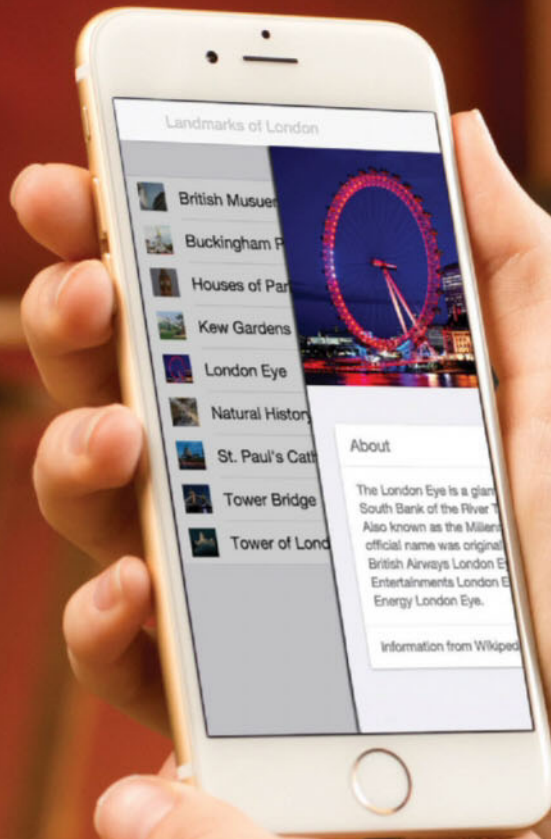
ver since the first iPhone hit the market eight years ago, mobile has become the dominant platform for displaying webpages and web apps. Since then web developers have been working tirelessly to emulate the look and feel of native iOS apps in HTML5 and JavaScript. Then iOS 7 happened – and it had a brand-new look and feel; all of those libraries and designs that first appeared due to the creation of the first iPhone suddenly looked ancient in the face of new flat designs that Apple started pumping out. If users notice they're using a web app, they inherently think it's lesser than its native cousins, so everything web devs had used to make their lives easier over the years needed a serious overhaul – and fast.

Enter Framework7, a seriously comprehensive set of libraries and assets that lets you put together a modern iOS-like app in no time at all. No more fishing around for icon images or manually animating transitions between different views, we get all of that out of the box. In this tutorial, we're going to make a simple app that shows off some of London's most famous tourist attractions.

1. Set up the project

Getting Framework7 started is a little tricky, we're going to have to do some house cleaning before we can start writing code. Before we grab Framework7 create a new folder for your project. Create an empty file called 'index. html' in your new folder and create a folder structure like the following:

```
- Project Folder (root)
- assets
```

2. Get Framework7

There are a couple of ways to get Framework7, you can grab it from GitHub if you like, but we're going to use bower to grab everything we need. Open up a terminal

window and cd into your new project folder. Next run the following command:

```
> $ bower install framework7
```

3. Copy project files

A new folder will appear called bower_components, go to bower_components/framework7/dist and copy all of the contents of the dist folder (all of the files inside dist, not the actual dist folder itself) to the root of your project folder, then delete the bower_components folder as we won't need that again.

4. Clean up

The files we've copied into our project folder is a skeleton app for Framework7 and we're going to use it as the basis for our own project. Delete the about.html, form. html and services.html files. Then open index.html and scroll down to line 10 and make the following changes:

```
// From this
<link rel="stylesheet" href="css/framework7.
min.css">
// To this
<link rel="stylesheet" href="css/framework7.
ios.min.css">
```

5. Strip index.html

A lot of the stuff that we will be making use of is in index. html, but there's also a lot of stuff that we're not going to be making use of. To save confusion we're going blank slate. Delete everything from index.html between the <body></body> tags.

6. Strip Core.js

Head into the js/ folder and open my-app.js for editing. Delete everything already in the file and add the following in its place and save.

```
var myApp = new Framework7({
init : false
});
var $$ = Dom7;
myApp.init();
```

With the myApp variable we've created a new instance of Framework7 to use. The $$ variable is the Framework7 Dom7 library that handles DOM manipulation – it's like jQuery, but lighter. Finally, MyApp.init() begins our app.

7. Display in a view

Mostly everything that is displayed in a Framework7 app is within a view. By adding classes to certain HTML elements we allow Framework7 to treat certain elements in certain ways. With classes, Framework7 enables us to create navigation bars, pages and toolbars. We're going to use the first two.

8. The classes have it

In Step 6, we have a number of divs with classes. On the right elements in the right order, Framework7 uses these classes to manipulate user interactions and animate elements. Class="navbar" tells Framework7 to use that div as a wrapper for the navigation bar, class="navbar-inner" becomes the holder for the text content and class="center sliding" aligns our text to the centre and adds a sliding animation when the view is changed.

F7 is Retina-ready

Straight out of the box, F7 comes with a great Retina-ready icon set as well as styles that let you get on with your markup and application logic. No more tweaking CSS margins, paddings and so on trying to make everything look just right.
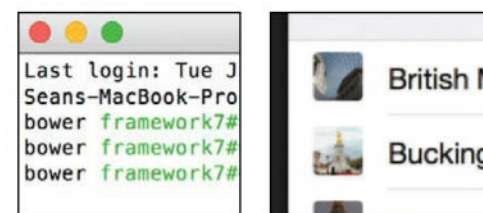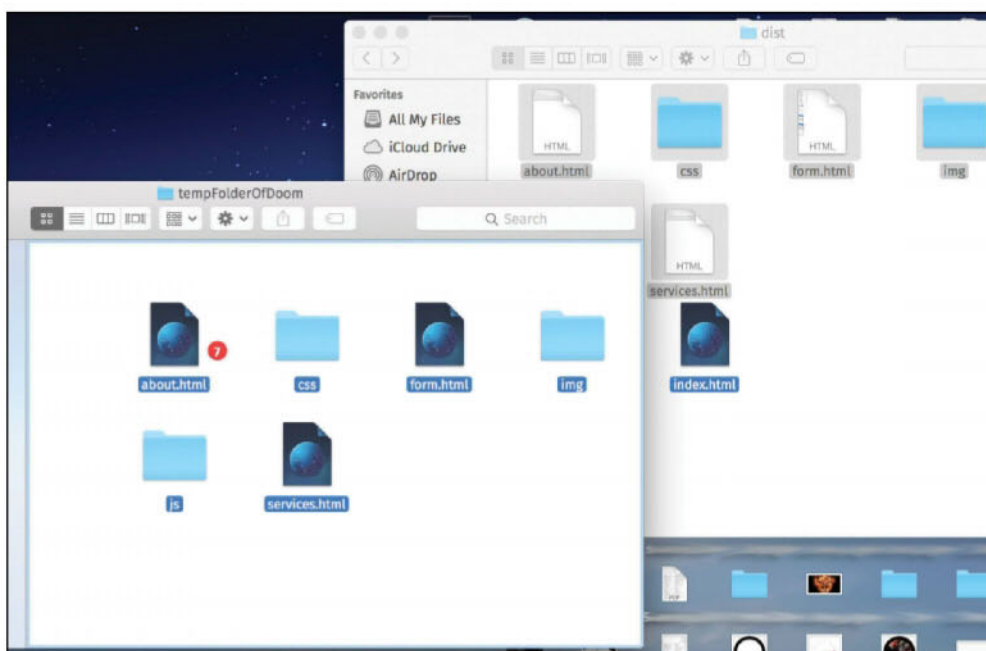
Left
Using Gulp and Bower, you can build a custom F7 library that only has the modules you need, but that's painful for what we're doing, so just copy the 'kitchen sink'

Top left
Bower makes getting Framework7 an absolute synch. Simply open terminal, put in the command and Bower grabs everything we need from the GitHub repo

Top right
The item-media class on a <div> element lets us add little icons to the items in our list

9. Preview our work

Framework7 relies heavily on AJAX for most actions that affect the content of the DOM. This means we need to run a local server to view our project files. On most systems that come with a Python installation, you can set up a quick static file server with:

```
$ python -m SimpleHTTPServer 8080
```

10. Content with content

So far, our app does little. It's a view with a navigation bar that says 'Landmarks of London' and not much else – we need content. Grab the resources from FileSilo and move the landmarks.json file to the project root. This contains all of the information we need to build a list of options that our users can click. Next move the contents of the assets folder to the assets folder you made earlier.

11. Create our first page

To put content in a view, we need a 'page' to insert it into. Think of a 'view' like a book cover that binds everything and a 'page' as a page. Add the following after the closing tag of <div class="navbar">. With data-page, we give our page a name we can access.

```
<div class="navbar"> ... </div>
<div class="pages navbar-through toolbar-through">
<div data-page="index" class="page">
```

Framework7 Android

An iOS app on an Android system would look out of place, wouldn't it? Don't worry, Framework7 has a Material Design version for Android too. Same code, but with different styles.

```
<div class="page-content">
<div class="list-block">
<ul id="places">
</ul>
</div>
</div>
</div>
</div>
```

12. Register our view

Before we can manipulate our view, we need to register it with a Framework7 instance (myApp variable). In my-app.js add the following just before myApp.init():

```
var mainView = myApp.addView('.view-main', {
// Because we use fixed-through navbar we
can enable dynamic navbar
dynamicNavbar: true
});
myApp.onPageInit('index', function (page) {
console.log("main-view initialised");
});
```

Now when myApp.init() is called our view-main is registered and initialised, and then a callback is called with the onPageInit listener. We can now write code to populate a list of places from landmarks.json.

13. Populate our page with data

To make a list of places a person can go to, we're going to GET landmarks.json and use its info to populate our page. Back in my-app.js amend myApp.onPageInit() call so it looks like this:

```
myApp.onPageInit('index', function (page) {
$$.getJSON("landmarks.json", function(data){
console.log(data);
});
});
```

Now if you refresh and look at the console, you'll see an object with all of the data to build our list. Remember that $$ is like the Framework7 equivalent of jQuery, and a lot of its functions follow similar naming conventions.
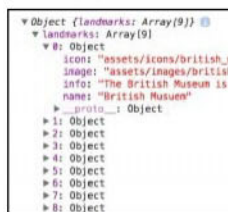
14. Add HTML

Now that we have the landmarks.json file we can put together HTML elements based on the data we have. Inside the callback for getJSON, add the following:

```
myApp.landmarks = data.landmarks;
var place = undefined, list = "";
for(var x = 0; x < myApp.landmarks.length;
x += 1){
place = data.landmarks[x];
list += '<li class="landmark-link">\
<a href="#" class="item-link" data-
landmark="' + place.name + '">\
<div class="item-content">\
<div class="item-media"><img src="' + place.
icon + '" width="29"></div>\
<div class="item-inner">\
<div class="item-title">' + place.name + '</
div>\
</div>\
</div>\
</a>\
</li>';
}
$$('#places').html(list);
});
```

For each landmark an <li> element is created and added to the #places <ul>.

15. Assign click events

Now we need to be able to tap elements. Using the landmark-link class, assign a click event to every list item.
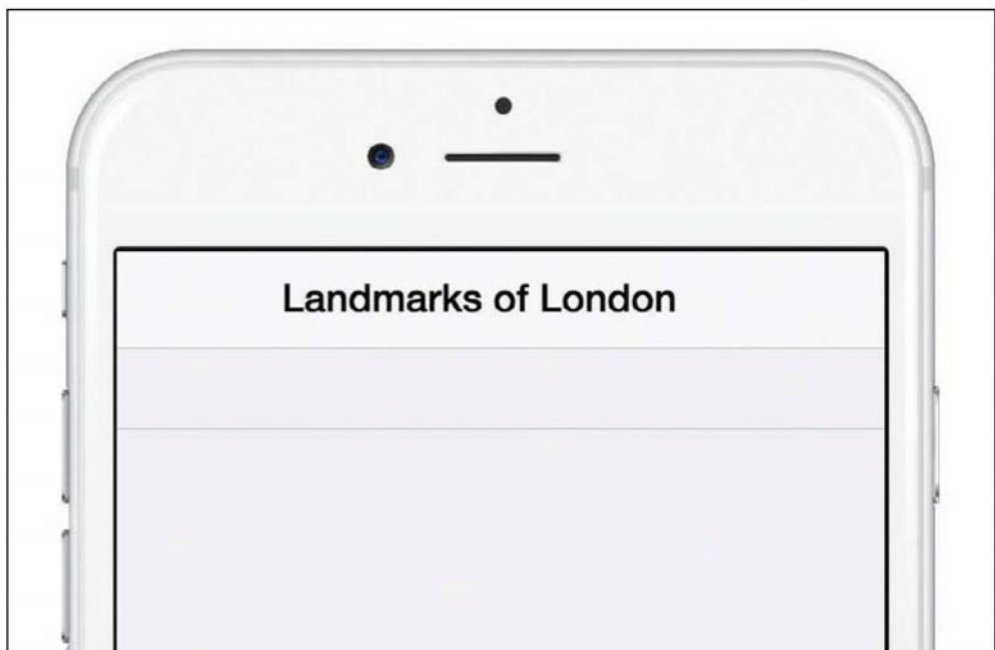

Top left
With $$.getJSON, retrieve and parse a JSON file with all the information we need to build our page. Of course, this can be any JSON output
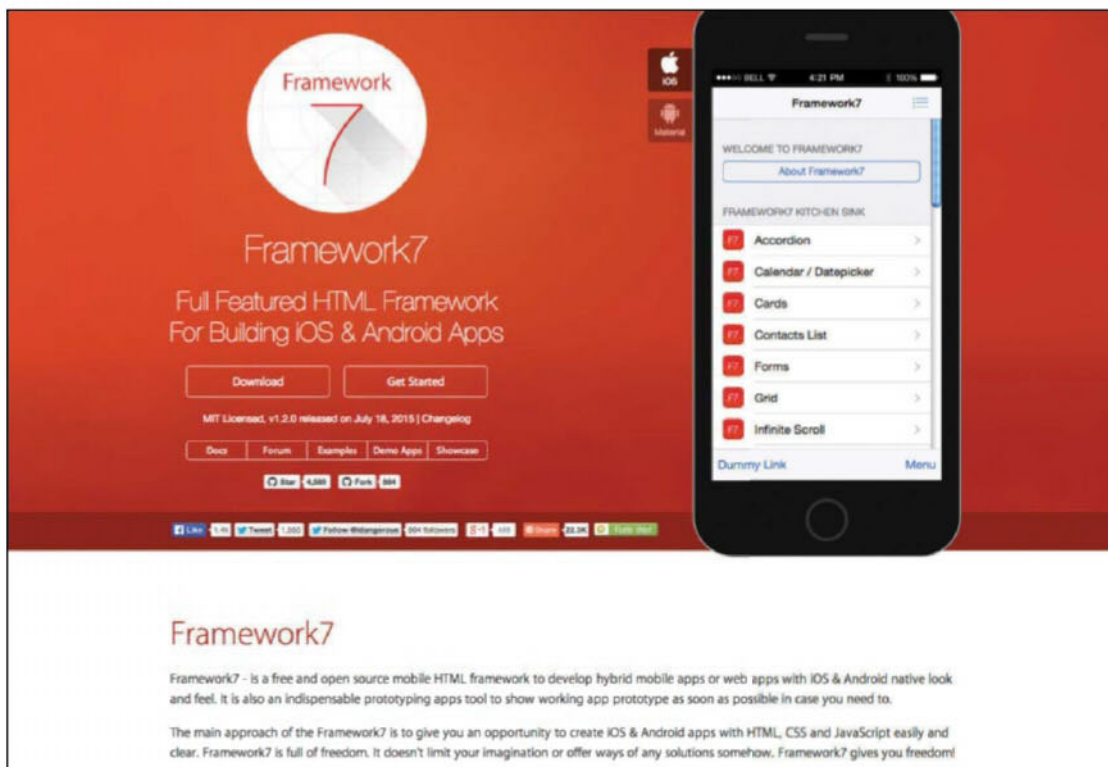
Top right
Using D7 (F7's DOM manipulation library) we can generate and insert the HTML we've created from our JSON file

Right
Our app is pretty bare-bones, but we now have a foundation to build great things on

Landmarks of London

```
...
$$('#places').html(list);
$$('.landmark-link').on("click",
function(evt){
// Clever clicky code goes here...
});
```

16. Clever code

When we click an item in our list, we need to find out which one we clicked. On the <a> tag we added in our $$.getJSON we created a data-landmark data attribute. We can get that value and then work through every landmark stored to get the appropriate information needed to create another page.

```
...
$$('.landmark-link').on("click",
function(evt){
var clickedLandmarkName = $$(evt.target).
parents('a')[0].getAttribute('data-
landmark') ;
for(var y = 0; y < myApp.landmarks.length;
y += 1){
if(myApp.landmarks[y].name ===
clickedLandmarkName){
break;
}
}
});
```

17. F7 templating engine

When we tap our list item, we want to make a new page with all of our information. Multiline strings are a pain, so

we're going to use Framework7's template library – we just need to activate it. Find the $$ variable in my-app.js and change the code to this:

```
var $$ = Dom7,
$T = Template7;
var landmarkTemplate = $$('#landmark-
template').html(),
compiledTemplate = $T.
compile(landmarkTemplate);
```

18. Create a template

Template7 works a lot like handlebars, by using {{[VARIABLE_NAME]}} we can replace chunks of code with values that we pass. In the FileSilo files you downloaded earlier, there is a landmark_template.html file. Copy its contents and add it to the end of index.html – just before the <script> tags we already have there.

```
<!--Insert landmarks_template.html here-->
<script type="text/javascript" src="js/
framework7.min.js"></script>
<script type="text/javascript" src="js/
my-app.js"></script>
</body>
```

19. Use our template

Now that we have a template, we will go on to using it. In my-app.js we were looping through all of the landmarks we knew about to find the information for the list item we clicked. Once we find it, we can use the data to generate HTML by compiling our template. We can do this by passing an object with the variables that we used in the template (the {{ }}).

```
if(myApp.landmarks[y].name ===
clickedLandmarkName){
var info = {
placeName: myApp.landmarks[y].name,
placeInfo: myApp.landmarks[y].info,
placeImage : myApp.landmarks[y].image
};
var compiledHTML = compiledTemplate(info);
break;
}
```

20. Render the template

Now, compiledHTML contains the HTML for our new page, but we've not added it to the DOM yet. We could add it with $$([ELEMENT]).html(compiledTemplate), but that won't register the page with our Framework7 instance. Instead, to get all the back-button and animation goodness we can use F7's built-in router. This will render our content and animate it approriately.

```
...
var compiledHTML = compiledTemplate(info);
mainView.router.loadContent(compiledHTML);
break;
}
...
```

21. Round-up

Now we've put together a fully interactive, native-like prototype app in no time at all. We've used views, explored the part that classes play in F7 and rendered valid HTML with F7's template engine T7. Remember, F7 can do so much more, so get exploring!

Create a flickering background image

As seen on thestlbrowns.com/#/history/the-early-years

Menu rollover icon
As the user rolls their mouse over the burger menu, the circle becomes a baseball in keeping with the site theme.

Vintage film effect
The background image is given a greater vintage impact with a flickering, film-scratched movie over the top with a low opacity.

Reactive logo
The main logo on the screen moves around as the user moves their mouse around the screen, reacting to user input.

Outer border
The border around the page is orange, but as the user scrolls down, the border adjusts to the new coloured background.

Historical timeline
As the user scrolls down, a timeline appears on the left of the screen showing where the user is in the history of the team.

With the web being such a new medium and it only existing on shiny screens, it is important that websites are able to capture the mood of what is trying to be designed, going beyond the gloss that computers bring. The St. Louis Browns baseball team have a great microsite dedicated to the historical society of the team. As the site is dealing with history it chronicles the team's story through a timeline approach using a single-page scrolling design. To give maximum impact to the page, the first image takes up exactly the size of the browser window and there is a lovingly crafted vintage, film grain and scratches effect over the top of the image. This is created by stretching an MP4 movie with dust and scratches over the top of the image, with a very low opacity that allows the original image to show through. The effect is subtle due to the low opacity – it is not distracting to the viewer but at the same time it instantly communicates a sense of age and the historical legacy of the team. To continue this theme, all of the images used have a slightly worn look to them as if the ink hasn't quite adhered to the block when printed. This takes the design beyond shiny computer graphics and reinforces the theme to the user.

A time-travelling story

<comment>
What our experts think of the site

"The indelible history of the St. Louis Browns inspired a vintage design on a modern storytelling platform. Historical photography brings to life anecdotes and stats from their 52 seasons. And thoughtfully considered interactions and animations create an immersive, delightful full-screen experience."
Justin Striebel, art director, HLK

Technique

1. Create a composition
In After Effects create a new composition 1000 x 562 pixels, 24 frames per second with a duration of 2 seconds and 1 frame. Click OK to create this, then go to Layer>New>Solid and choose black as the layer colour.

2. Add noise
Add a Tint effect to this layer. Turn on the stopwatch to add keyframes and at different points along the timeline change the tint colour to different greys or blacks. Now use the Add Grain effect, then make the noise monochromatic and turn the intensity up.

3. Random lines
Deselect all layers and grab the Pen tool. Click at the top and then the bottom to draw a line. Make sure it has a white stroke. Now add keyframes for it at different places along the timeline, moving the line on the screen for each keyframe. Repeat this step with another layer.
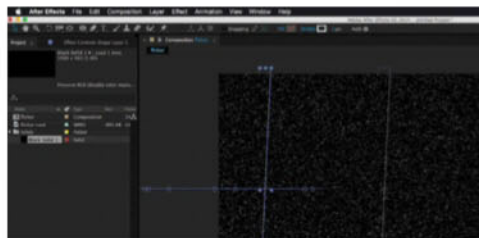
4. Add to render queue
Next we will go to Composition>Add to Render Queue. Here we will leave all of the options at default and then just hit the Render button. After that we will put the video through Miro Video Converter (**mirovideoconverter. com**) to get an MP4 file that is more suitable for playing on the web.

5. Over to CSS
In the CSS for your web project add the following rules. The body is set to have an image covering the background, while the video is set to have a very low opacity, stretched over the top of the image, to give the flicker effect over the top.

```
body, html{
margin: 0; padding: 0;
background: url(img/bg.jpg) no-repeat center
center fixed;
background-size: cover;
}
video {
position: absolute;
z-index: 100;
top: 0; left: 0;
min-width: 100%; min-height: 100%;
opacity: .0875; filter: alpha(opacity=8);
}
```

6. Add the video tag
In the body section of your code add the video tag as shown below. The CSS will automatically place this over other content and stretch to fill the screen. Save the file and view it in a web browser to see the flicker effect over the top of the image.

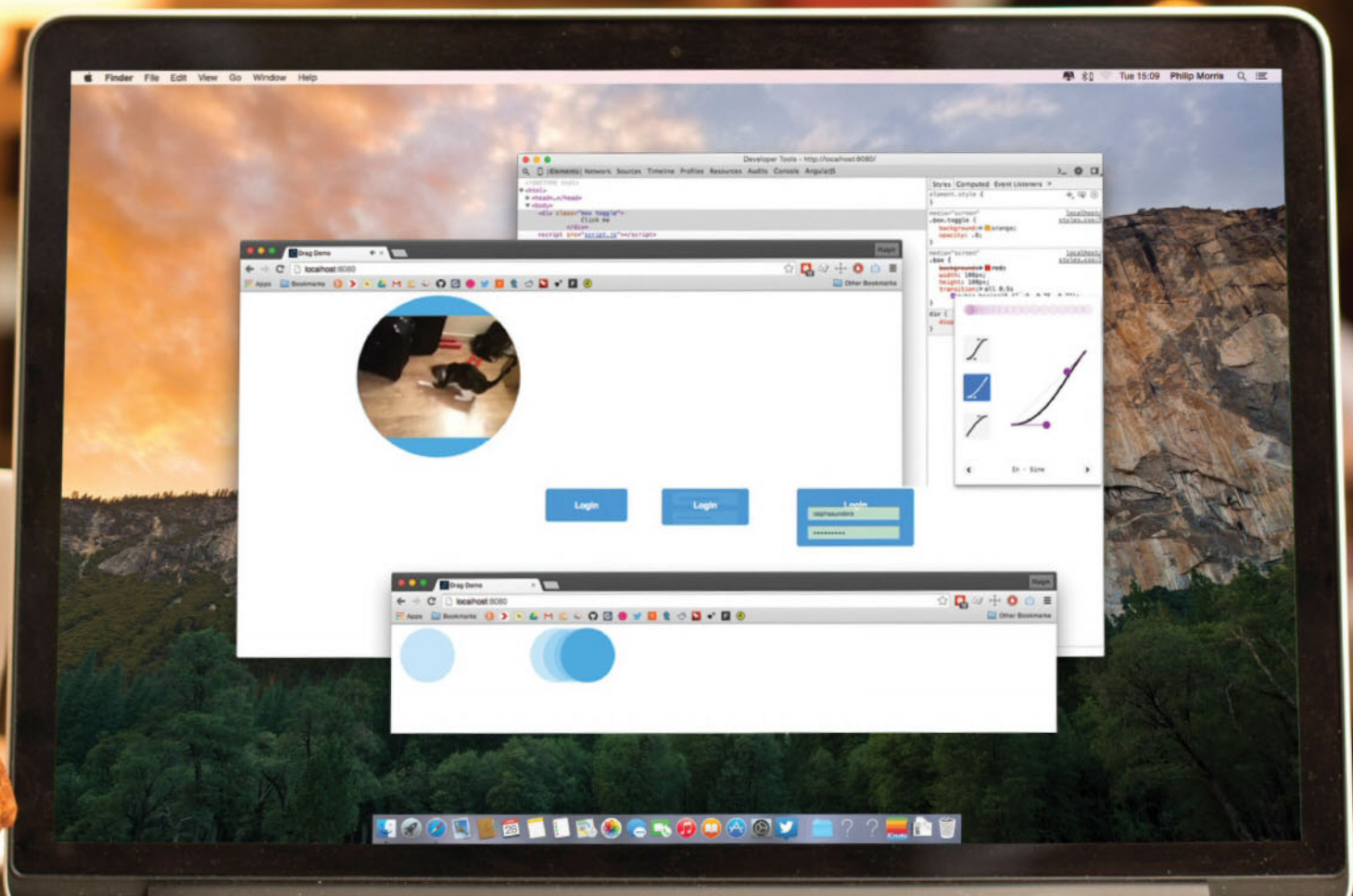```
<video src="img/flicker.mp4" loop autoplay></video>
```

# Craft supercharged web animations

Find out how to create high-performance animations from basic state changes to simple physics with these techniques

**A**nimation on the web has always been fairly computationally expensive and while devices have gotten a lot faster overall, we still have to be very careful about how we craft our animations for maximum performance. The bottleneck is often how long it takes to render or 'paint' a frame of the animation. This painting process is very expensive so anything else going on, like JavaScript for example, can cause it to spill into the next frame. When lots of frames are 'dropped' like this you get janky animation, which no one likes.

It's for this reason that a lot of jQuery $(element). animate animations get janky. It's very easy to interact with the DOM more than the ideal amount, leaving less time for the painting process to complete.

In this tutorial we cover basic and complex animations using CSS to do the heavy lifting and JavaScript to retain the state. We also cover how you can use JavaScript to craft more advanced web animations that are interaction driven, without impacting performance.

It's important to craft animations for your target devices. It's no good achieving 60FPS on a powerful desktop if you're building for mobile. For that reason, it's important to use powerful remote debugging tools, for example you can use those provided by ghostlab (**vanamco.com/ghostlab**).

### TECHNIQUE 1
## Basic animation

### 1. Animation between states
The source files for this are under the 'basic animation demo' folder on FileSilo. Please look there to see the full source for this technique and for these tutorial pages. First, let's create a simple box that will animate between two states when clicked.

```
<div class="box">
Click me
</div>
```

2. The two states
There are two states here: the box and then the box when it's 'toggled'. Notice that the box will transition all CSS properties that change over half a second with ease-in easing. We're expecting the box to change colour and opacity when clicked. The CSS is doing all of the heavy lifting here.

```
.box {
background: red;
width: 100px;
height: 100px;
transition: all 0.5s ease-in;
}
.box.toggle {
background: orange;
opacity: .8;
}
```

3. JavaScript to change state
We want to interact with the DOM as little as we possibly can. The JavaScript isn't actually doing a lot here – what it does though is that it interacts once with the DOM on page load and then it interacts again subsequently every time that the box has been clicked. This leaves the CSS to figure out everything else, which is a more efficient option for the browser.

```
function bindToggle() {
var box = document.querySelector('.box');
box.addEventListener('mousedown', toggle,
false);
}
function toggle(e) {
```

```
e.target.classList.toggle('toggle');
}
```

4. Timeline of animation
The associated tutorial files on FileSilo include examples of a timeline that shows the animation that occurs when the box has been clicked once. We have given the browser as much time as possible to render each animation frame by using as little JavaScript as possible here. This has meant that we have been able to achieve frame rates of 60FPS on our device.

5. Use easing curves
Chrome DevTools have a handy curves pallet for adjusting easing on CSS animations. Here we're using it to make most of the animation happen in the first half. The element feels like it responds immediately, but still has a satisfying transition.

6. Add easing to our transition
The cubic-bezier function shares its basic premise with the curves tool in Photoshop. The ease-in property we had before is essentially a preset and is still a cubic-bezier behind the scenes.

```
.box {
transition: all 0.5s cubic-bezier
(0, 1, 1, 1);
}
```

Design animations
The curves pallet provides an excellent way to design your animations that simply isn't possible with a tool like Photoshop. Get your designers to sit with you and craft the ideal animation.
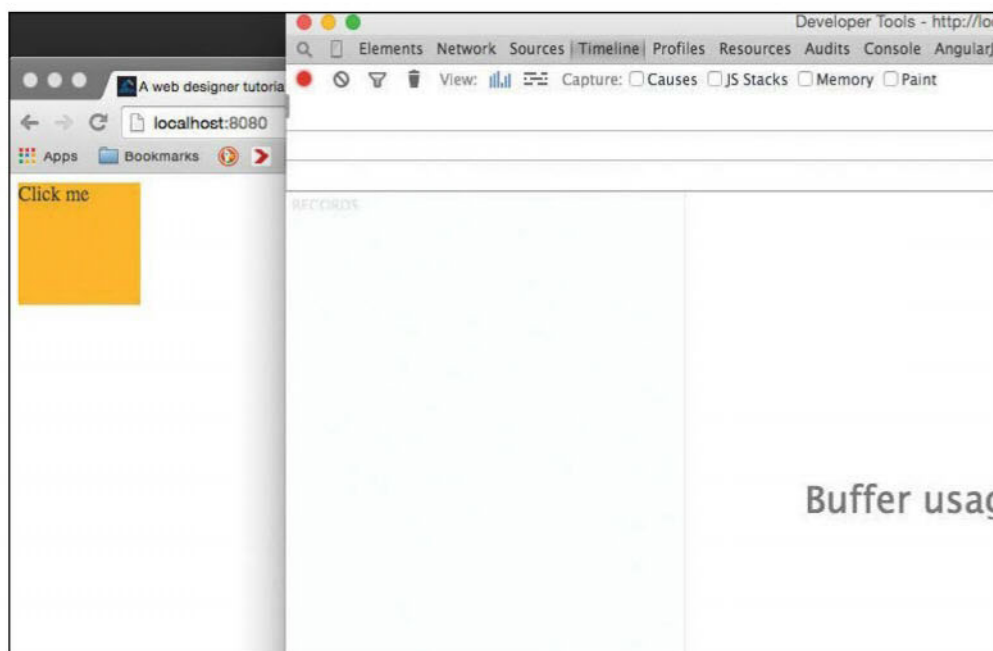
Left
To capture interactions, start recording and then interact with the page. For more detailed information you can check the Capture options at the top of the panel

Top left
Along with custom curves, Chrome DevTools also has a handful of handy presets. Here's what a Sine-in curve actually looks like

Top right
This is the timeline panel in Chrome DevTools. It enables us to record what's happening on the webpage we're interacting with and then analyse the results

TECHNIQUE 2
Complex state transitions

1. Transitions for animations

We can run multiple transitions from one change in state, and this will enable us to build more intricate UI animations. The full demo code is under the 'complex state transitions' folder on FileSilo and is required for reference in this section. Here's the HTML we'll be working with.

```
<article class="form-transform">
<button class="trigger">Login</button>
<form class="form">
<input type="email" name="email"
placeholder="email@example.com">
<input type="password" name="password"
placeholder="password">
</form>
</article>
```

2. Initial state

Now we move on to the initial state of our form component. The full styles are in the demo folder and we'll highlight some of the key ones in the next steps.

3. Initial CSS states

We want the log-in form to transition in when the button is toggled. To make space for that the width and height

of the container will change and the form will need to fade in. These are the initial states required:

```
.form-transform {
width: 150px;
height: 60px;
transition: all 1s;
}
.form {
position: absolute;
opacity: 0;
transition: all 1s;
}
```

4. Second states

When the widget gets expanded the container will now grow to accommodate the form. The form itself will also grow, move in from the top, and fade in – all at the same time. If this were JavaScript animation we may expect to see a performance hit with simultaneous animations.

```
.form-transform.expanded {
width: 250px;
height: 130px;
}
.form-transform.expanded .form {
width: 200px;
top: 50px;
opacity: 1;
}
```

5. Add interaction

With the CSS set up we will now need to make the state change. It's similar to last time, but with a subtle difference. Instead of toggling a class on the element that has been clicked, we toggle a class on the container element instead – allowing us to structure the CSS in the way we did.

```
function bindToggle() {
document.querySelector('.trigger').
addEventListener('mousedown', toggle,
false);
}
function toggle()  {
document.querySelector('.form-transform').
classList.toggle('expanded');
}
```

6. Button in mid-transition

The animation had to be slowed down to get the button in mid-transition. It's worth considering what your UI states will look like while animating and perhaps designing with it in mind.

TECHNIQUE 3
Breaking the rules!

1. Leave the DOM alone

So long as we stay away from the DOM, we can still use JavaScript to aid us in creating animations on the web. The rest of the tutorial will be focused on adding physics to the x axis of this circle.

2. The variables

The full source for this technique is under 'drag demo' on FileSilo. These are the main variables we'll work with to implement simple physics. It's worth taking time to understand these because they can get complex.

3. Render and update

The render function is expensive because it interacts with the DOM. UpdatePosition calculates the position of the item every frame based on the velocity, acceleration, friction, and current position of the item.


Care with the loop

The animation loop will run as many times as possible per second. If we want to achieve 60FPS we have ~16ms to run all the JavaScript, update the DOM, and paint the frame. Be efficient.
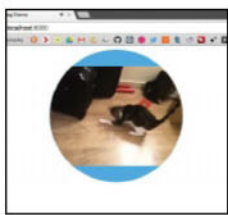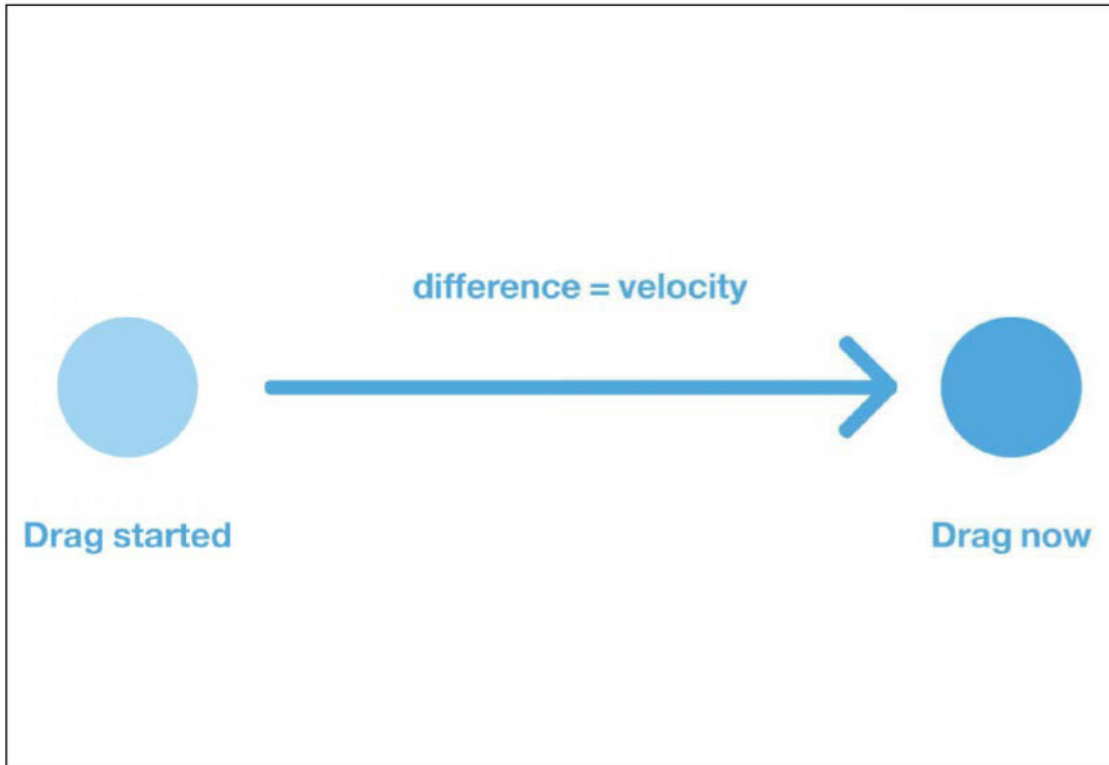

Top left
The physics technique isn't just for basic DOM elements or even static media. Modern devices are even capable of applying it to <video> tags
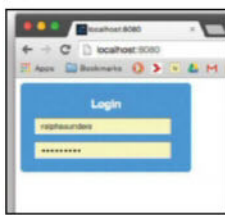
Top right
After the animation the form looks like it has been a form all along, although submitting it may present a few issues
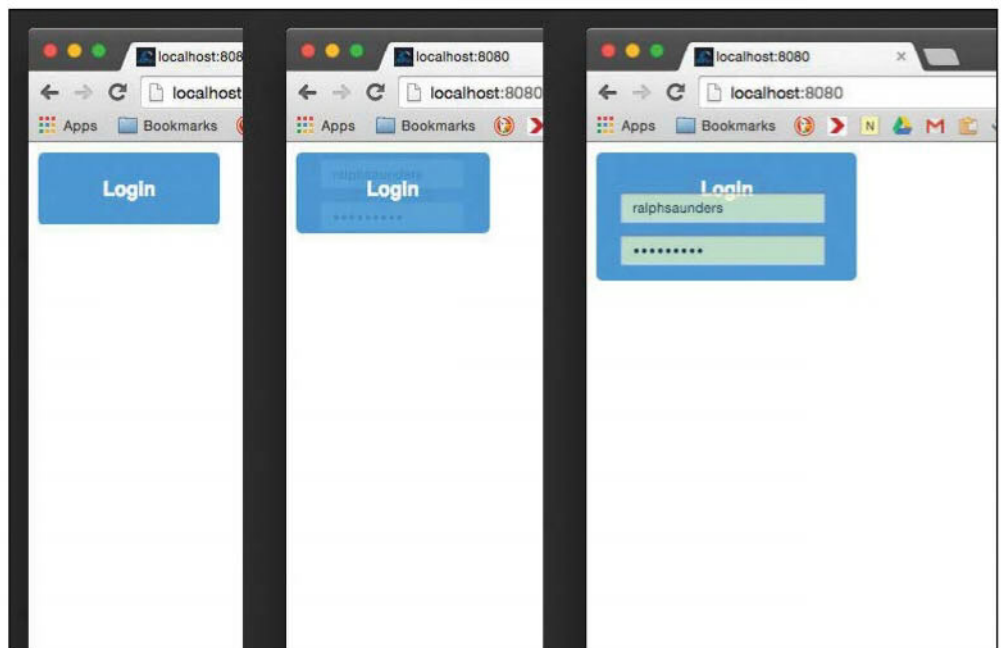
Right
Here is what that form animation looks like across a few points in its animation. Looking at it frame by frame, it's clear the log-in text gets obscured which looks poor

difference = velocity

Drag started   Drag now

```
function render() {
element.style.transform = 'translateX(' +
positionX + 'px)'; // update DOM
};
function updatePosition() {
velocityX += accelX;
velocityX *= friction; // friction always
present
positionX += velocityX; // where the item
will be rendered this frame
accelX = 0; // the further acceleration is
from 0 the faster the item is
};
```

4. Apply force
When the item is dragged we want to apply a force to it. To do this we calculate how far the item has been dragged (drag velocity) and then how it should be applied as acceleration. We do this by taking into account the current velocity.

5. The animate function
We have to create a loop for animation to exist. This function will call itself as quickly as possible applying any forces, updating the position of the item, and then rendering to the DOM. All code inside this loop needs to be fairly efficient for smooth animation.

```
function animate() {
applyDragForce(); // apply any forces
updatePosition(); // calculate position of
item for this frame
render(); // update the DOM
```

```
requestAnimationFrame(animate) // do it all
again
};
```

6. Mouse bindings!
This is our mousedown handler. When the user starts dragging we will update some variables to be able to later calculate the 'drag force'. We also bind a mousemove listener to keep the 'drag force' updated and a mouseup listener to clean everything up once the drag is over.

```
function onMousedown(e) {
dragStartX = e.pageX;
elementDragStartX = positionX;
isDragging = true;
setDragPositionX(e);
window.addEventListener('mousemove',
setDragPositionX, false);
window.addEventListener('mouseup',
onMouseup, false);
};
```

7. Mousemove and mouseup
When the drag has ended we unbind the listeners we set at the beginning of the drag, lest we have the item we're animating stuck to our cursor. We also update dragPositionX, which is used in the drag force calculation in the animation loop.

```
function onMouseup() {
isDragging = false; // finish drag and
clean up event listeners
window.removeEventListener('mousemove',
```

```
setDragPositionX, false);
window.removeEventListener('mouseup',
onMouseup, false);
};
function setDragPositionX(e) {
var moveX = e.pageX    dragStartX; // how
far mouse has been dragged
dragPositionX = elementDragStartX + moveX;
// how far element has been dragged
};
```

8. Kicking it off
When the document is ready for interaction set the element we're applying physics to. Then set the animation loop going. Lastly, bind onMousedown to mousedown on the element we're applying physics to.

```
document.onreadystatechange = function() {
if(document.readyState == "interactive") {
element = document.querySelector('.
drag-me');
animate(); // start animating
element.addEventListener('mousedown',
onMousedown, false);
}
};
```

9. The affect of friction
Multiplying the velocity of the item by a number less than 1 will make it slower every frame. This mock friction allows our item to slowly glide to a halt – interesting things happen when you make the friction variable greater than one.

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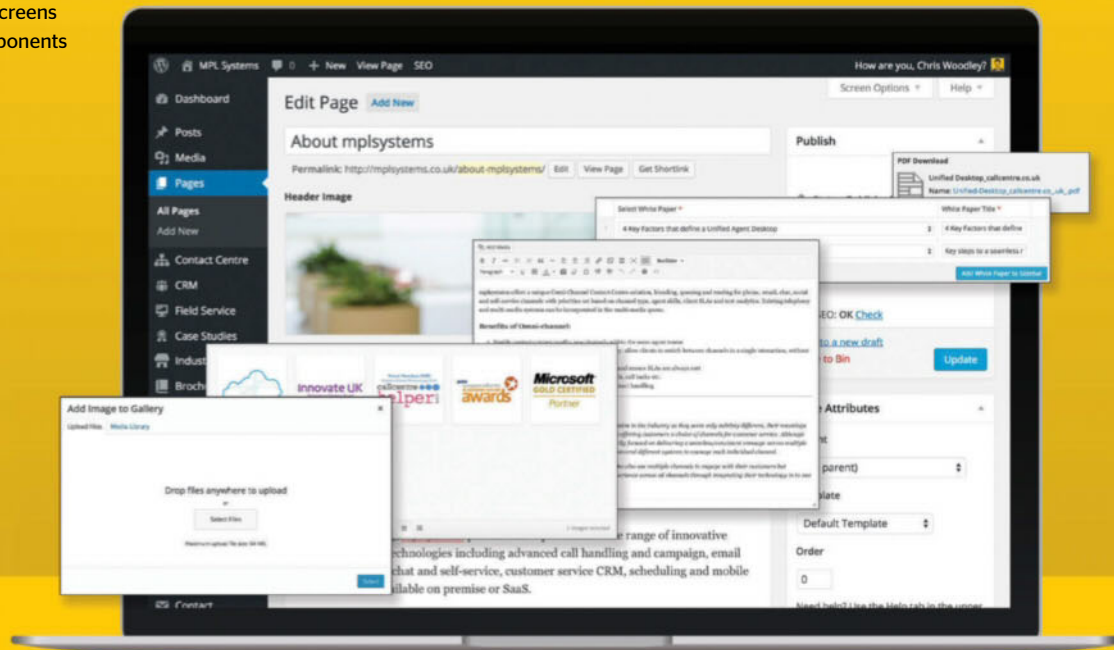
THE PRO GUIDE TO

WORDPRESS

PLUGINS

**DISCOVER 23 OF THE BEST ADD-ONS
HAND-PICKED BY THE INDUSTRY**

Beef up your edit screens with bespoke components for more flexibility

TAKE CONTENT MANAGEMENT TO THE NEXT LEVEL

ADVANCED CUSTOM FIELDS BY ELLIOT CONDON
advancedcustomfields.com

The Advanced Custom Fields plugin seriously beefs up your WordPress edit screens. With fields ranging from simple text and image inputs, a support network of users and a documentation site that makes even the most advanced task seem effortless, you have by your side the Swiss Army knife of WordPress page management.

Once installed, utilising the power of Advanced Custom Fields becomes apparent after setting up your first field group. Telling the field group which page template you want it to appear on, or which custom post type you would like it to appear within, is easy, and although Advanced Custom Fields is built specifically for developers (to help create next-level WordPress websites for their clients) the usability of the fields within the WordPress CMS feel as familiar as the existing WordPress user interface, ensuring webmasters have an easy time using the newly added content boxes.

Including Advanced Custom Fields functions in your template files couldn't be simpler. Create a group, add some fields, then add functions such as <?php the_field('second_wysiwyg'); ?> to your template files wherever you want the new content to appear. Style the resulting functions by wrapping them in the same CSS classes that you have created within your website's stylesheet – it really is mind-blowingly easy.

A great example of using the Advanced Custom Fields plugin would be to create a manually manageable 'Related Articles' or 'Related Content' area within one of your template files. You'd create this using the Post Object field, which displays a selectable list of posts from all, or specific post types that your site has in place. This gives webmasters additional options when creating pages in order to cross-promote articles, products or just about any type of content. When called upon, WordPress' default functions can be introduced into the code of the Post Object, such as get_the_post_thumbnail or the_title to make the list of posts more visually appealing to site visitors. You can also include any of the Advanced Custom Fields field data that has been added to the edit screen of a post type template.

Advanced Custom Fields will open up a whole new corridor of opportunity for your WordPress builds, one that your clients and development team will want to explore again and again.

ALTERNATIVE PLUGIN
SIMPLE FIELDS
simple-fields.com

Simple Fields is a slightly less in-depth solution to custom fields. The plugin offers an array of options to extend the WordPress edit screens functionality with a simple, easy-to-use interface.

HOW TO CHOOSE THE RIGHT PLUGIN

01. Do your research
Unfortunately, WordPress plugins don't always play nice with each other. When selecting a plugin, you should always check the WordPress plugin directory for information such as compatibility issues, last updated, number of active installs and user ratings.

02. Set up a testing environment
If you are using a particularly high number of plugins on your site, or are simply concerned by the lack of support for a particular plugin, it makes perfect sense to set up a duplicate of your site and then just test the hell out of it. This is particularly useful when you are adding plugins to a live client site because it can save you from any potential banana skins.

03. Send a support ticket
Well, why not? Sending a support ticket to the plugin developer could give you an idea of just how long the developer takes to respond to any potential future issues. If you don't get a response, or if the response you do get seems a little lax, it might be better to leave it alone because it could indicate that support isn't there.

BACK UP NOW

Sometimes the worst happens, and you just won't have time to fix it. Adding too many plugins can turn your WordPress build into a potential game of Jenga, and sometimes the white screen of death will rear its ugly head.

Adding a plugin? Back it up first. Updating the theme? Back it up first. Updating WordPress to the latest version? Back it up first. Always, always, always back up your WordPress site before changing anything to do with your site's functionality, database, theme or base files.

The Duplicator plugin, found at **wordpress. org/plugins/duplicator**, is a rapid-fire way to generate a quick launching backup of all Word-Press files and your database, in a downloadable, neatly compressed ZIP file. The plugins' very own easy-to-use interface and download facility allow you to create a zipped up 'Archive' copy of your entire site and database as well as an installer.php file that is uploaded to your hosting account's root folder, along with the zipped-up back-up copy, that installs your website to its previous location without any fuss or hassle.

The Duplicator plugin is also great for migrating your site to a new hosting account or even to a new domain. When using the installer.php file to run the installation, you can specify a new URL for your site. Now, once you've deployed the backup to the new hosting account, all URLs found within the site will be automatically updated to the new URL, meaning all of the database data has been edited without having to go anywhere near phpMyAdmin. What's more, it then gives you a handy list of things to check once the installation is complete.

If you take nothing else from this article, this plugin should become your go-to tool for backing up your WordPress site.

ADD MULTI-LANGUAGE SUPPORT

WORDPRESS MULTI LANGUAGE
wpml.org

WordPress Multi Language is an easy-to-use translation management plugin built by a translation company. The plugin boasts some incredible features that doesn't just include easy management of languages, it's an all-in collection of language management tools built to work within a single WordPress install. Everything from menus to footer credits can be translated into the language that you want with ease with built-in support for custom themes and even other plugins.

The plugin comes with a great set-up wizard that takes you through the whole initial setup. Once you have selected your base language, adding new languages can be done at the click of a button, select from over 40 initial languages with the added ability to add your own custom language variants. An out-of-the-box language picker can be added to your header or sidebar via the plugins settings area, or you can choose to create your own and add it to your theme's template files where you want the picker to appear.

You also have the choice of how to display your multilingual content, such as using a different domain per language, for example **myblog.co.uk**, **myblog.de** or **myblog.fr** and so on, by using subdomains, like **en.myblog.com**, **de.myblog.com** or **fr.myblog.com**, or by using the default of keeping the multiple languages within the same domain.

Once you've selected your chosen languages, you can then simply navigate to your page's edit screen

ELLIOT CONDON
@elliotcondon

The developer behind the Advanced Custom Fields set of plugins, Elliot is also a user interface specialist. Follow Elliot and you are never too far away from the latest ACF features sneak-peeks, updates, news, server downtimes and fixes.

CHRIS SPOONER
@chrisspooner

A self-proclaimed "maker of pretty pictures", Chris Spooner offers a great insight into the life of a freelancer and gives away many time-saving tips for the world of graphic and web design. Perfect for seasoned designers and developers alike.

SPECKYBOY
@speckyboy

Speckyboy is an online magazine run by Paul Andrew who is based in Scotland. Speckyboy is a superb resource for web design and development tips, tricks and general inspiration, from CSS to fonts and everything else that's in-between.

RESPONSIVE DESIGN
@RWD

RWD has everything you need to know about responsive web development. Great for polishing up your techniques or looking for new ways to customise a plugin to ensure it fits in with the mobile world.
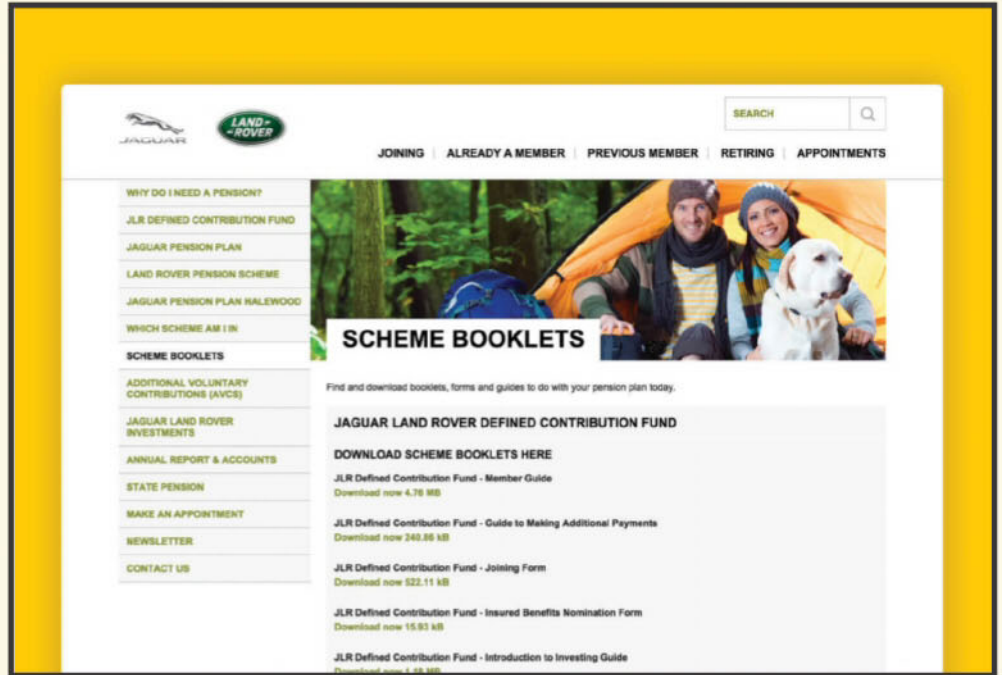
LABZIP
@WPLabZip

The perfect WordPress Twitter account. It's an Aladdin's cave of all kinds of web goodies. From resources to tutorials, plugins and themes to... well, just about anything. All of this is of course all in one place too. Make sure you give them a follow.

where you will find WPML has added some extra settings to your list of pages. As well as displaying published pages and drafts, you will also be able to see how many pages you have amongst your selected languages, which is a great way to see a quick overview of how many of your master languages pages have already been converted into your desired language. WPML also adds a great visual helper in the form of country flag images when you click into the posts or pages menu within the backend, and from there you can add content for each of your chosen languages as you probably would do for any other page or post.

WPML offers a unique way for you to manage your translation team, with the ability to turn WordPress users into 'translators'. These translators can then be assigned specific pages and posts to translate and a handy overview of all translations and translators can be easily viewed. Here you can see the status of each translation assigned to a specific translator – the whole management process is as streamlined as it gets.

WPML also offers a vast amount of support for commerce sites using WooCommerce and this includes adding translation options for your products, related products, sales, promotions, cart, checkout and even confirmation emails.

If you're having some trouble generating your translations, WPML has the perfect answer in the form of an optional connection to a paid-for translation service that is built right into the plugin. From the translation dashboard, you can send content for translation to your chosen languages and, when complete, it'll appear right back in your edit pages ready to be published straight onto your site.

ALTERNATIVE PLUGIN
QTRANSLATE
qianqin.de/qtranslate
QTranslate is another multilanguage WordPress plugin. With translations all kept in the same edit page it can create more clunky-looking edit screens, but it has many features of a paid-for plugin.

QUICKLY CREATE CUSTOM POST TYPES INSIDE WORDPRESS

CUSTOM POST TYPE UI
bit.ly/1eCYM8P
Custom Post Type UI offers a great way to create custom post types and taxonomies from inside the WordPress CMS admin area. Say you need a custom post type called 'Movies', and you need to add some taxonomies for actors, year, rating and genre – well this can all be done in seconds with CPT UI. Lots of options are offered up for customisation of post types, including: custom slug, hierarchical (true/false) and customisation of the display labels within the WordPress backend. The CPT UI plugin can also be used to import and export existing custom post types, making backing up post types fail-safe. Code created by CPT UI can also be copied into your functions.php file for sound and stable creation of custom post types when releasing a theme to market.

ALTERNATIVE PLUGIN
TYPES
wordpress.org/plugins/types
Types is a great way to manage custom post types and taxonomies with the benefit of handling basic custom fields too. Types lets you add extra image fields and text areas within your custom post types.

CHRIS WOODLEY
Lead developer
Forme Creative
formecreative.co.uk

Here are five plugins I simply could not do without. These plugins have become as important to my daily workflow as Illustrator, Photoshop and Dreamweaver and are an integral part of my Wordpress backend landscape.

01. Essential Grids
essential.themepunch.com
Highly customisable grid builder for displaying posts with uber modern templates. Great for creating portfolios, product sliders, galleries and more.

02. MemberPress
memberpress.com
Need to create a membership site with paid-for content and integrated payment gateways? Then MemberPress is the plugin that you need. It is ideal for services selling digital downloads.

03. TablePress
tablepress.org
Creating tables in WordPress is not simple. It involves adding custom code and is time-consuming. Who wants to do that? This is a free plugin that enables users to create and manage tables easily and quickly. A table can include different types of data and there is even the option to add formulae.

04. WordPress SEO
yoast.com/wordpress/plugins
The only SEO tools you will need that comes with a traffic light scoring system. This plugin has a host of extremely useful features including content analysis functionality, assistance in writing better content, the option to automatically generate XML sitemaps and remove code bloat.

05. Contact Form 7
contactform7.com
This is the hassle-free option for creating simple contact forms for file upload. It's a flexible and powerful plugin that is easy to use. Create a form, pick options and copy the shortcode to a post.

The new MPLSystems website uses the Slider Revolution plugin for its homepage slider, with a second full-screen slider optimised for mobile view

RESPONSIVE READY SLIDERS

SLIDER REVOLUTION
revolution.themepunch.com

The Slider Revolution plugin gives you an ocean of customisation options for your website sliders. With options that include full-screen display, responsive-ready (out-of-the-box) transition effects and custom animations, you'll never need to see the same transition twice.

A unique feature of the Slider Revolution plugin is its 'Slide Template' option. The slides can then be easily created on the fly by using information found within posts or custom post types and presented in a prebuilt or custom-made template.

Slider Revolution supports YouTube and Vimeo video content and image-based content within the same slide. JQuery transitions, multiple layers, Google Fonts, custom CSS and many more great features have helped make Slider Revolution the most popular slider plugin on Envato as well as being extremely popular amongst theme developers.

With its application-like interface it does take some getting used to – you wouldn't want to hand this plugin over to a less-than tech savvy client. However, things like the plugin's drag-and-drop caption placement functionality and the slide duplication feature mean that once you have finally settled on a layout, creating new slides is a breeze.

ALTERNATIVE PLUGIN
WOOSLIDER
bit.ly/1ItYDAV

WooSlider is a simple and straightforward alternative to Slider Revolution. WooSlider offers a slimmed-down set of functionality with the added benefit of Instagram slides and a carousel slideshow option.

9 MORE MUST-KNOW PLUGINS & RESOURCES

PLUGIN
BUDDYPRESS
buddypress.org

BuddyPress is the ultimate social network plugin for WordPress. With groups, private messaging, activity streams and notifications – to mention just some of the great features this plugin offers – you really don't need any other social network plugin in order to get up and running, for any type of subject, for any number of members.

PLUGIN
W3 TOTAL CACHE
bit.ly/1K16aUr

Everybody wants a faster and more efficient WordPress install. Why? Because it engages more visitors and of course Google likes it as well. A faster site equals a better ranking. Ever since Google's recent algorithm upgrade speed has become a very important factor in getting a good ranking. The W3 Total Cache is one of the most widely used speed and performance WordPress plugins. W3 Total Cache is a complete framework that improves site performance by up to ten times by combining a series of minifying tasks and caching processes that dramatically improve the overall user experience. In addition it also offers transparent content delivery network (CDN) integration.

RESOURCE
TEMPLATE TAG REFERENCE GUIDE
bit.ly/1OQFFW9

This site, produced by DBS Interactive, a US-based digital agency, is a comprehensive reference guide for WordPress template tags listed in an easy-to-follow format. What's included in its guide? Author tags, bookmark tags, category tags, comment tags, date & time tags, Include tags, post tags and much more. The beauty of the site is that each tag is displayed inside a collapsible panel. All you need to do is click the desired tag and a host of information appears. This will give you a brief overview of the tag, the code in action and what each element of the code means. If you need to, simply copy and paste the code and modify accordingly.

PLUGIN
WP MAINTENANCE MODE
bit.ly/1zFgcHT

A simple, yet amazing WordPress plugin. WP Maintenance Mode is perfect for new sites not yet launched with its timer count-down feature and coming-soon splash page. It's also perfect for instances when you are working on a live site if you don't want your visitors to see your half-finished masterpiece.

PLUGIN
WOOCOMMERCE
bit.ly/1rUkc7M

Possibly the best-known WordPress plugin, its power matches that of WordPress itself. It's ecommerce out of the box, giving developers and store owners total control over their online store. With over 29 per cent of market share, WooCommerce is now the most popular ecommerce platform.

PLUGIN
WP SMUSH
bit.ly/1DcZmpB

WP Smush is a superpower image optimising tool. Scan and reduce your image file sizes upon upload, reduce load times, keep those high-quality visuals and make search engines love your site even more. WP Smush is a worthy inclusion for each and every WordPress website that you end up building.

PLUGIN
MAX MEGA MENU
maxmegamenu.com

Max Mega Menu is a ready-made mega menu replacement for your WordPress theme. Just drop it in and you're good to go. It uses a simple column system in order to help create user-friendly and easy-to-navigate mega menus. With easy CSS editing you can use this plugin and customise it to complement or match any brand or colour scheme.
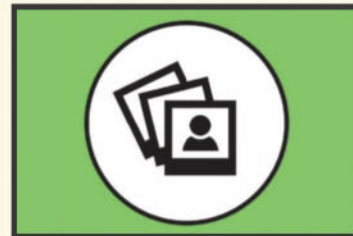
RESOURCE
LYNDA.COM
lynda.com

From Adobe Certified Experts to world-renowned coding gurus, **lynda.com** is the type of online video tutorial resource where the knowledge of and teachings from the contributors is second to none. The information found within it can be trusted to be accurate, up to date and reliable.

RESOURCE
WORDPRESS.ORG
wordpress.org

Perhaps a little obvious, but constantly overlooked, **WordPress.org** is where the developers responsible for bringing us WordPress go to 'hang out'. You can learn about every function, find out about the most popular themes and get involved yourself by contributing towards the WP core or by joining the support team.

Make an image-based pop-up animation menu

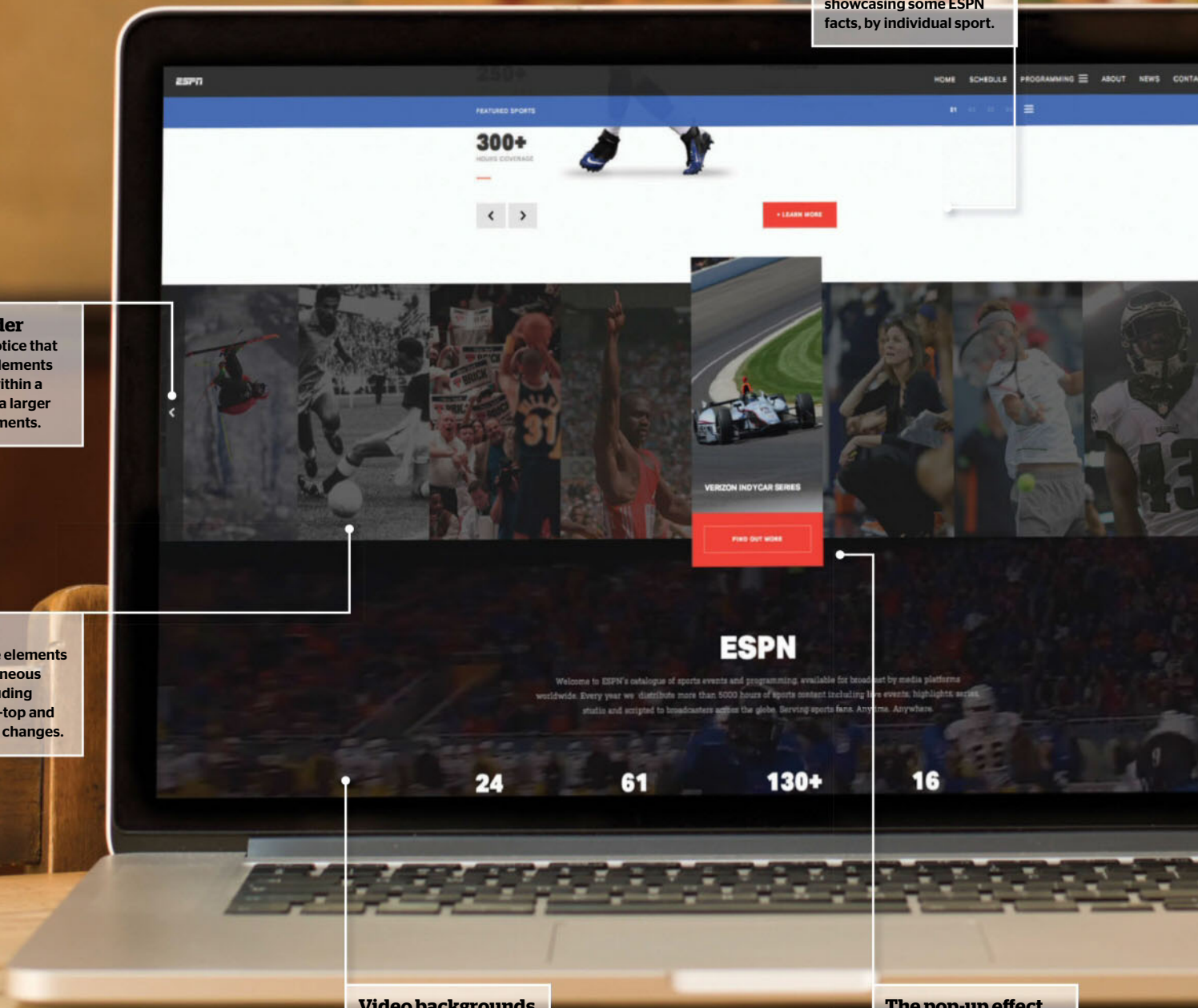As seen on **mediadistribution.espn.com**

Above the slider
Just above our elements you can find a neat parallax slider showcasing some ESPN facts, by individual sport.

Within a slider
You may also notice that the hoverable elements are contained within a slider, enabling a larger selection of elements.

On hover
Hovering on the elements leads to simultaneous transitions including opacity, margin-top and hidden element changes.

Video backgrounds
The focus effect is not the only treat on this page, or within the site. Note the great use of video backgrounds.

The pop-up effect
Scroll down the page until you find the the elements which utilise the pop-up effect we are re-creating in this workshop.

Hover effects – they never go out of fashion. No matter how much web design progresses away from the desktop and further into the touch-screen world, where hover effects become moot, designers still love to come up with new and entertaining rewards for placing the cursor on a relevant area of the page. Not only does it deliver the doorway to the next step in the user experience, but it also make it more entertaining to knock on that door in the first place.

Take sports channel ESPN's website: a veritable feast of background video, parallax animations, responsive layouts and, of course, impressive hover effects. In this Web Workshop, we're going to create our own version of the pop-out menu items that appear about halfway down the ESPN page. Hover on any of the images in the strip, each corresponding to a sport on the ESPN line-up, and that image will pop out of the strip in full colour, presenting a link to the relevant page. It's a relatively simple effect, and fairly easy to re-create, but there's a small thrill that comes from hovering over each item to see the same effect. Combining Bootstrap CSS with some CSS3 animations, we will build our own pictorial menu and re-create the hover effects.

Don't be a purist all the time

"It's a common criticism that too many effects and animations are superfluous and do nothing to enhance the flow of information. While a lean path through your site is a must, it's also important to remember how many of your users are not web designers and appreciate a bit of animated magic for its own sake."
Richard Lamb, freelance web designer at Inspired Lamb Design

<comment>
What our experts think of the site

Technique

1. Initial HTML
Our starting point is a container and three menu-item divs within. These divs will contain all the elements, visible or hidden in static and hover states. Inclusion of Bootstrap's CSS will style the container and responsive classes. Also add a header and title.

2. Initial CSS
When styling the h1 tag, make sure you are giving generous margins above and below, to accommodate raising elements. Add transition to the menu-item class, covering all possible animations. Don't forget the vendor prefixes. To align our elements snugly, counter the Bootstrap padding either side.

3. Insert images
Insert your images into each of the three menu-items. You may want to include a max-width of 100 per cent in the CSS. Then give each image an opacity of 0.3. Combined with the dark background of the div, this gives each image a darkened appearance.

```
<div class="menu-item col-sm-4"><img
src="images/bread.jpg" alt=""/></div>
.menu-item img{
opacity:0.3;
}
```

4. Link box HTML
Underneath the image, but still within the menu-item, insert a linkbox div which contains an a href link. Repeat this for all three menu items. This will be hidden initially, so move on to the CSS for these elements.

```
<div class="menu-item col-sm-4">
<img src="images/bread.jpg" alt=""/>
<div class="linkbox">
<a href="#">SERVE ME</a>
```

```
</div>
</div>
```

5. Style boxes
As mentioned, set an initial display of none on the linkboxes. Style as you see fit, but a generous padding around both the box and the link, plus a subtle border, looks good and corresponds with the look of the ESPN site that we are trying to emulate.

```
.linkbox {
display:none;
adding: 25px;
background: #03A678;
txt-align: center;
}
.linkbox a {
border: 2px solid #4DAF7C;
color: #ffffff;
text-decoration:none;
padding: 25px;
}
```

6. Hover effects
Three distinct hover animations bring the effect to life. First, what you have to do is just set a minus value to the margin of the menu item. Then set the opacity of the image to 1. Finally, change the display value of the linkbox, bringing it into view.

```
.menu-item:hover {
margin-top:-50px;
transition: all 0.2s;
}
.menu-item:hover img {
opacity:1;
}
.menu-item:hover .linkbox {
display:block;
}
```
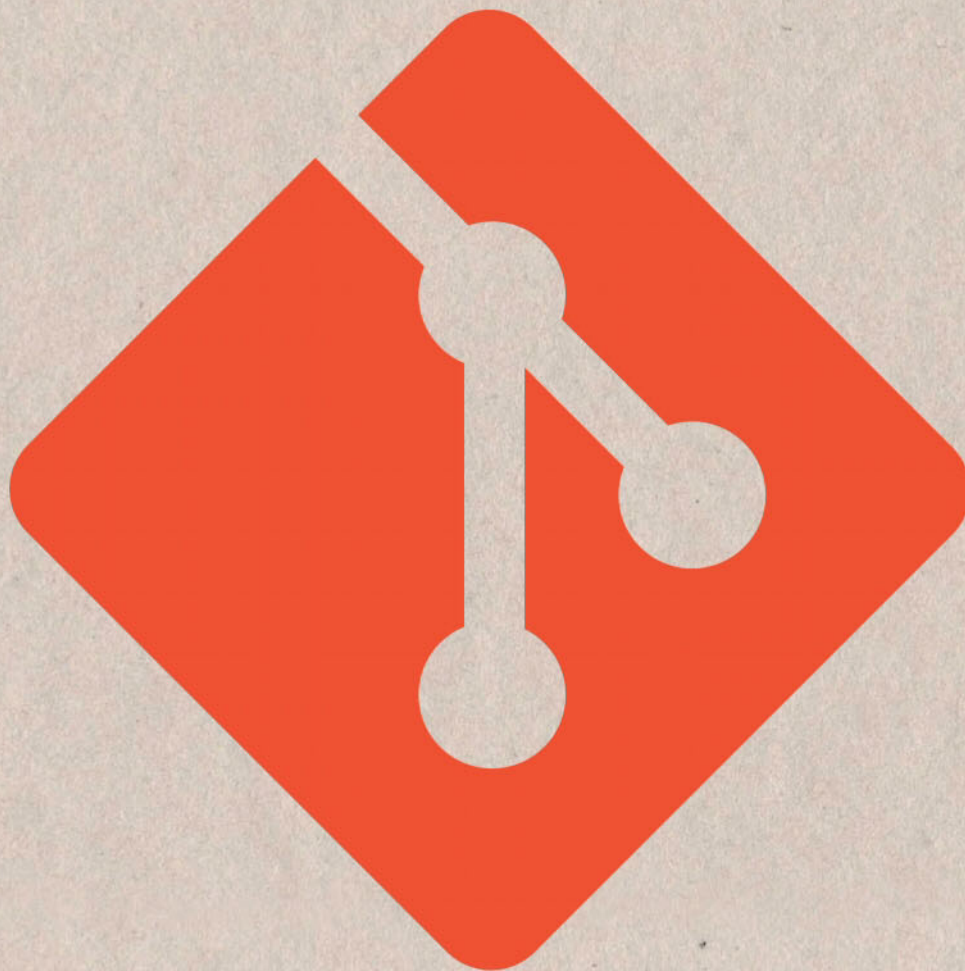
The complete guide to

Git

How to take control of projects and maintain multiple versions of one system

Why you need Git

THE VERSION CONTROL SYSTEM HAS A HOST OF BENEFITS

Linus Torvalds faced an unsurmountable problem when his Linux kernel became bigger and bigger. At some point, using ordinary VCS systems could not keep track with his work.

He developed Git to address this pain point so that large codebases could be kept track of. Furthermore it's based on a decentral concept and this means that every developer has a fully fledged repository on his workstation: network access is required only when data is to be synchronised.

What's it good for?

If you think your company – like many other small companies – does not need a version control system, think again. The availability of a VCS improves the productivity regardless of size. This is accomplished by multiple factors: first of all, code hosted on a VCS is more likely to survive office fires, ransomware strikes and similar occurrences of bad luck.

Secondly, code hosted in Git is much easier to modify. You can freely try out something new: if it turns out to be a disaster, undoing it is a matter of one click. Finally, using a VCS makes synchronising multiple devices so much easier.

How Git works with GitHub

THE WEB-BASED REPOSITORY AND INTERFACE IS ESSENTIAL

Going decentral is beneficial in that it makes your codebase more resilient: an office fire is much less critical if the data is safely tucked away in the cloud. This knife, of course, cuts both ways – if GitHub goes down for maintenance (which it will do from time to time), then any work will certainly grind to a halt.

Benefit number two involves value-added features. GitHub is best-known for a well-designed web interface that provides its clients with a large variety of additional functions which make wrangling with code easier. Code hosted on GitHub can also be accessed from a browser of your choice, with commonly used folders being provided as a ZIP archive.

These utilities are tied into a complex social network. Figuring out which projects are being worked on by which developers is a matter of one

or two clicks; issues, improvement requests and similar metadata can also be centralised in a GitHub repositiory.

Projects working on 3D or PhotoShop files profit from embedded viewers: a WebGL-based utility ensures that everyone can take a look at a preview of the files' contents.

Documentation can furthermore be hosted in the form of a wiki, which comes with every repository and is maintained by GitHub automatically.

Finally, GitHub has tremendous reach. Open source code tends to be hosted on GitHub as it tends to get the most views there: if a project manages to get enough likes then this placement is enough to ensure extra attention.

Developers tend to be experienced with the value-added features of GitHub: subjecting them to a different user interface might lead to friction.
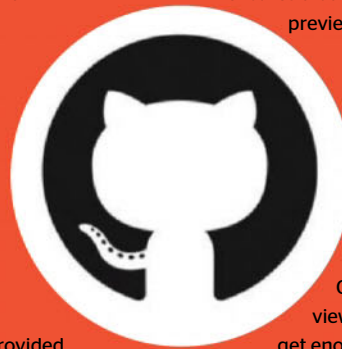
Working with repositories

NOW WE KNOW THE BENEFITS LET'S CREATE A CODE STORAGE SPACE

The first step involves selecting a folder of choice. Enter the 'git init' command in order to create the hidden metadata directory:

```
tamhan@TAMHAN14:~/GitHouse$ git init
Initialized empty Git repository in /home/
tamhan/GitHouse/.git/
```

After copying files to the repository, enter 'git status' to see the current state. Git will inform you that the new files need to be added via 'add' – if your file goes by the name somecode.cpp, add it as per the following:

```
tamhan@TAMHAN14:~/GitHouse$ git add
somecode.cpp
```

Git is now aware of the existance of somecode.cpp and this knowledge enables us to perform a commit: it

describes an operation which 'shoves' the current state of the project into the repository:

```
tamhan@TAMHAN14:~/GitHouse$ git commit -m
"Initial commit"
[master (root-commit) 3c7c91f] Initial commit
 1 file changed, 6 insertions(+)
 create mode 100644 somecode.cpp
```

'Git diff' can then be used to perform an analysis comparing your local data with the one that was found in the repository. Pushing new code to Git is accomplished via a combination of the 'git add' and 'git commit' functions.

Getting back to an older version can then be accomplished via a combination of 'git reset' and 'git checkout -f'. The relevant sequence is shown in more detail in the screenshot on page 76.

Even though Git is usually used with server-based repositories, the product can also generate patch files sent via email. Patch files spawn via 'git format-patch': the command expects the Secure Hash Algorithm (SHA) sum of the first commit to be considered and creates one .patch file for each commit.

> **❝** *'Git diff' can then be used to perform an analysis comparing your local data with the one that was found in the repository* **❞**

Installing Git

GETTING STARTED WITH GIT IS REALLY EASY

When working with an Unix-like operating system, getting Git is as easy as invoking the correct package manager command. On an Ubuntu workstation, use the following:

```
sudo apt-get install git
```

Developers using Windows or Mac OS X can obtain a working version of the toolkit by downloading the prepared installers from **git-scm.com/downloads**. Using them is really easy – just treat them like another typical set-up routine. Nothing prevents you from compiling your own version of the product should push ever come to shove: and you can find the source code at **git-scm.com**. Git requires a username and an email address of the current user and these can be set via the following commands:

```
tamhan@TAMHAN14:~/GitHouse$ git config
--global user.name "TAMHAN"
tamhan@TAMHAN14:~/GitHouse$ git config
--global user.email
"tamhan@tamoggemon.com"
```

14 Git commands every user needs to know

THE GIT COMMAND-LINE TOOL PROVIDES A LARGE SELECTION OF USEFUL FEATURES. FIND OUT MORE ABOUT THE CREAM OF THE CROP

1. Partial upgrade

Sometimes, an outdated local codebase needs just one or two specific changes. In that case, 'git cherry-pick <id>' is your friend – it applies just the changes specified under <id>.

2. Add a note

Commits can be documented with a note containing further information – unlike commit messages, they can be changed later. Note management is handled via the git notes command family.

3. Track down regressions

If old bugs suddenly show up again, 'git bisect' will track them down using a divide and conquer algorithm. Simply set the good and bad commit IDs, and test each of the codebases provided.

4. Emailing patches

If your team coordinates itself via a mailing list, patches can be sent automagically by using the git 'send-email -to <recipient> <files>' command sequence. File will accept wildcards such as OO**.

5. Send-email command

On most Unix-like operating systems, Git will not recognise the send-email command by default. This is due to the email package being hosted separately – install it via 'apt-get install git-email'.

6. The blame game

Ever wanted to find out whose drunken coding spree caused the system to fail and mess up all your hard work? Use 'git blame' – it annotates your source file with information about each line's change history along with the SHA ID of the individual commits.

7. Sign a tag

Developers working on highly sensitive code will be delighted to hear that Git provides a way to create tags by making use of a digital signature. If GnuPG is correctly wired into Git, then the process of signing a tag can be accomplished by simply passing -s to git tag.

8. Harness the shortcut

Entering frequently used Git commands over and over again is boring and tiresome. Use 'git config --global alias.<shortcut> <forwhat>' to create a time-saving reduced version of the command passed to <forwhat>

9. Speed me up!

Git's internal management structures can become messy as time goes by. Cleaning up can be accomplished by invoking the integrated garbage collector. Doing so is easy – all you have to do is just enter 'git gc'.

10. Local copies

Use 'git clone <url>' to copy a remote repository. The command downloads the current state of the code and the metadata commonly found in the .git subfolder, thereby giving you a complete local copy.

Good coding

When a mistake is found in a branch it should be fixed. To stop bouncing around from branch to branch, try out the git checkout command. Go to **bit.ly/1OZHHmR** for more information.

11. List ignored files

Advanced users use .gitignore to block any unnecessary files from the version control system. Entering 'git ls-files --other --ignored --exclude-standard' lists all files which the version control system will not accept.

12. Remove a file

When a file is no longer needed you can make use of 'git rm' to inform the version control system that the element in question should not be contained in future checkouts.

13. The Git menu

Like most Unix command line utilities, Git is shipped with a compact help system. Enter 'git --help' in order to receive a list of commonly used commands along with a short description of the role of each.

14. Tell me more!

Invoking a subcommand with the --help parameter tends to yield loads of extra information on the parameters taken in. If you've done this but this still does not solve your problem, then rest assured that a quick Google session will provide you with all the help you need.

What are branches?

WORK ON COMPLEX PRODUCTS IS RARELY COMPLETELY LINEAR, AND THIS IS WHY WE USE BRANCHES

Imagine yourself to be working on an application made up of two parts: a custom user interface and a third-party computational engine, which is to be accessed via an intermediary layer. Sadly, issues at the side of the supplier force a change of calculation provider. In this case, the developer responsible for changing the engines transforms himself into a roadblock: work cannot proceed until the interface has been updated. Branches can solve this problem in an elegant fashion.

The codebase is broken down into two pieces as per the flow chart on the right: the user interface developers keep hacking along on the main trunk, while the person responsible for the adaption toils away on the newly created branch.

Git takes care of keeping the two workflows separate and each team then work independently from one another. Once the adaptation is complete,

GitLab vs GitHub

HERE COMES THE COMPETITOR: GITLAB IS READY TO CHALLENGE GITHUB ON EVERY LEVEL

The company added a variety of interesting features to both stock Git and the add-ons provided by GitHub. First of all, collaborative tools received a significant boost: issues can receive attachments containing further information about the task at hand. In addition to that, a fine-grained rights management system permits you to set access levels on a need-to-have basis. Branch protection prevents 'lowly' users from pushing code into important branches, thereby accelerating the deployment of mission critical features.

Enterprise customers benefit from proprietary extensions to the underlying VCS. It can handle very large binary files effortlessly and it is possible to add these pesky PR assets to VC.

Finally, GitHub has been in the news recently due to the upload of some shady scripts and other political strifes. People who believe that vendors should steer far away from politics can use GitLab as an alternative.

The life of a project
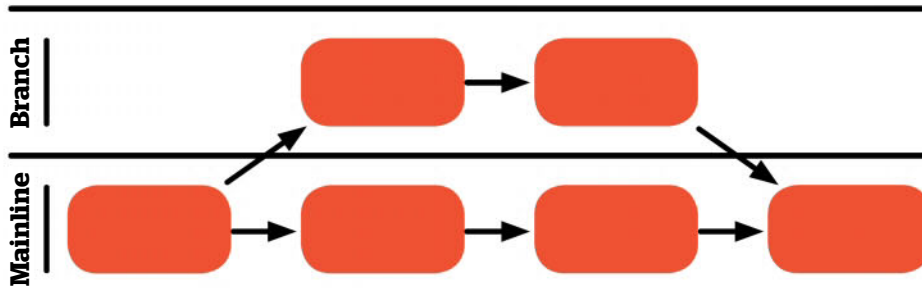
the two branches can be merged into one another again. Git assists this process by making use of a set of advanced comparison tools – you can easily find out which changes and/or conflicts might occur.

Git identifies the individual branches via the SHA sum of the individual files. Sadly, handling these long and unwieldy strings is not particularly comfortable: addressing them by strings would be easier. This can be accomplished by adding a tag to identify a specific

state of the project – in principle, a tag is little more than a symbolic link pointing at a version. They are commonly used to designate releases – users can easily find the code used to create a specific artefact by tracking down its tag.

Git's unique structure makes the creation of branches and tags very cheap: unlike SVN and CVS, codebases can regularly be found which contain thousands of branches and tags.

> ❝ *Git takes care of keeping the two workflows separate and each team then work independently from one another* ❞
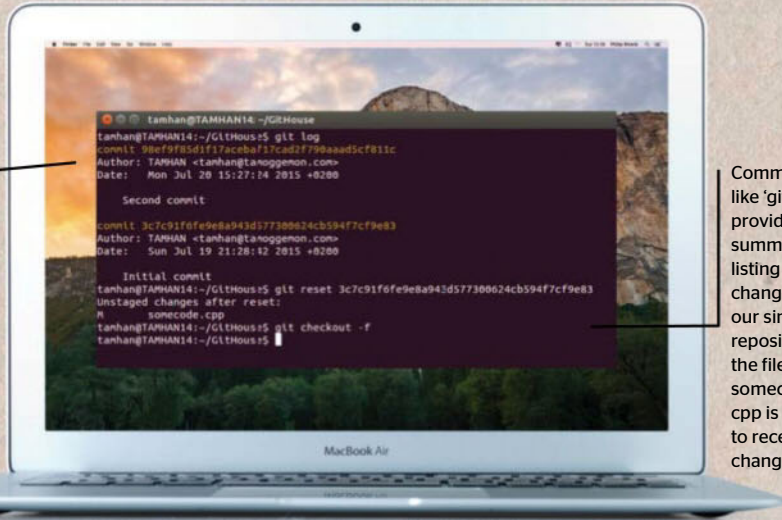
How to undo

HOW TO SOLVE COMMON DEVELOPER PEEVES USING GIT

Fixing bad local changes is best accomplishing by checking out the affected files once again: Git will replace your borked-up copy with a brand new one. Sadly, Murphy's law (anything that can go wrong will go wrong) ensures that problems are likely to occur only after the code in question has already been uploaded to version control.In this case, 'git revert <id>' is the remedy of choice. It 'isolates' the bad commit, and creates a new one containing the project's state before the mishap. This measure is important in that Git aims to present a complete and accurate state of the development process: under its philosophy, mistakes should be conserved for further study.

When working with services such as GitHub, the situation is more complex. Uploaded files cannot be removed reliably, as users could have forked or downloaded them – further information on that topic is available should you wish to read it at **help.github.com/articles/ remove-sensitive-data**.

Get connected

HOW TO EXCHANGE CODE

So a local version of Git turned out to be quite helpful. Git's true power can be harnessed only when combined with a server: it lets multiple developers and their various devices exchange code independently from one another.

Getting on a server

The following steps that we will take you through here will use a free GitLab account which will host an open source project. Sign up at **gitlab.com/users/sign_in**, and click the New Project button to create a new project. GitLab will ask you for a name and a set of accessibility criteria which define who is able to access the files contained within. After completion, a URL similar to **gitlab.com/TAMHAN/ImagineRepo.git** will be returned if you click the HTTPS button.

Contribute and maintain a project

With that, our repository is ready and waiting. The GitLab UI provides you with a sequence of commands which copy it to your workstation. Since we already have a repository from the steps on page 73, we will, instead, deploy it to the cloud by entering the following commands:

```
tamhan@TAMHAN14:~/GitHouse$ git push -u origin
```

```
master
Username for 'https://gitlab.com': TAMHAN
Password for 'https://TAMHAN@gitlab.com':
Counting objects: 3, done.
Delta compression using up to 8 threads.
Compressing objects: 100% (2/2), done.
Writing objects: 100% (3/3), 279 bytes | 0
bytes/s, done.
Total 3 (delta 0), reused 0 (delta 0)
To https://gitlab.com/TAMHAN/
ImagineRepo.git
* [new branch] master -> master
Branch master set up to track
remote branch master from
origin.
```

After entering git push, your local code is automatically transferred into GitLab's storage. You can inspect it via the Files tab of the web interface.

The common workflow approach

Now it's time to introduce a second developer into the equation and their first act involves the downloading of the code that needs to be worked on. Git works a bit differently from other version control systems out there in that it forces the developer to obtain a complete copy of all code that can be found online – a job accomplished via the following command

sequence:

```
tamhan@TAMHAN14:~/GitLab$ git clone https://
gitlab.com/TAMHAN/ImagineRepo.git
Cloning into 'ImagineRepo'...
remote: Counting objects: 3, done.
remote: Compressing objects: 100% (2/2), done.
remote: Total 3 (delta 0), reused 0 (delta 0)
 Unpacking objects: 100% (3/3), done.
    Checking connectivity... done.
```

Host it yourself?
Git's server-side components integrate themselves into the user management system of the OS. This leads to increased administration efforts – a problem solved by Gitolite.

Finally, code is to be returned to the repository all with a process known as a push:

```
tamhan@TAMHAN14:~/GitLab/
ImagineRepo$ git commit
[master bfbd81b] Uploading now
 1 file changed, 1
insertion(+), 1 deletion(-)
```

Do keep in mind though that all repositories are not created equal: some maintainers permit pushes from everybody, while others may limit themselves to uploads from known team members. A popular example for the second approach is that of Microsoft's .net framework: even though the framework was open sourced recently, changes can only be accepted from the Microsoft employees that are assigned to the relevant teams.

Git Log emits a list of commits leading to the current state. The string shown after the commit header is a hash ID which identifies the individual transactions.

Commands like 'git reset' provide a summary of listing changes. In our simple repository, the file somecode. cpp is shown to receive changes.

Command-line benefits

WORKING IN THE COMMAND LINE DOESN'T HAVE TO BE TIME-CONSUMING

Git's development was inspired by classic Linux and open source books such as *The Cathedral and the Bazaar*. Due to this, the product's native client takes the form of a command-line tool: both GitLab and the graphical frontends mentioned on page 74 are mere shells which invoke the Git client for you.

Hitting the command line yourself offers multiple benefits. First of all, the lack of an intermediary layer means that you can access Gits features directly.

Secondly, the relatively complex command structure makes for a great training opportunity.

In addition, should you use bash as your shell of choice, make sure to visit **git-scm.com/book/en/v1/ Git-Basics-Tips-and-Tricks** in order to obtain the Auto-Completion script. This script makes work so much easier and quickly as you can simply press the Tab key to receive IntelliSense-like suggestions and automatically fill commands.

Data recovery

GIT PROVIDES DEVELOPERS WITH AMPLE OPPORTUNITY TO SHOOT THEMSELVES IN THE FOOT

By far the most common error involves the loss of commits due to the deletion of a downstream element. In this case, the data still remains accessible – if you happen to know its SHA1 ID, that is.

Figuring out the SHA1 ID of a recently performed commit is best accomplished via the reflog command. Simply feed its output into a checkout or branch-creation command, and feast your eyes on recovered files. Another eeker involves the uploading of large files: each and every git clone will proceed to download the content in its entity even if it has been removed from recent commits. Even though this problem can – in theory – be solved with Git itself, using the BFG RepoCleaner is significantly faster (as in minutes instead of days) and is furthermore easier to use. Simply download the tool from **rtyley.github.io/bfg-repo-cleaner/** and follow the instructions to clean up your repository once and for all.

Scott Chacon @chacon
A GitHubber, open source developer and Git evangelist, Scott is also a writer and worked on Atom's Flight Manual.

Customising Git

ADJUSTING BEHAVIOUR LEADS TO BETTER UX

Git's configuration is collected from multiple places. Systemwide settings are stored in /etc/ gitconfig, while each user's home directory contains a GITCONFIG file with further settings. Finally, each repository can have its own attributes set via custom config files in its .git subfolder. Be aware that low-level files overwrite upper-level ones: a project can overwrite systemwide default settings.

By far the most important piece of configuration involves the setting of user data, which is best accomplished via the 'git config' commands that were mentioned in the installation instructions:

```
tamhan@TAMHAN14:~/GitHouse$ git config
--global user.name "TAMHAN"
tamhan@TAMHAN14:~/GitHouse$ git config
--global user.email "tamhan@tamoggemon.
com"
```

Another interesting bit of configuration involves the colouring of command line output. By default, Git will colour messages intended for display – this can be disabled via the following property:

```
git config --global color.ui false
```

Attributes can be used to provide Git further information about the file types handled. For example, some binary file formats might be diffable with special commands which can be registered by setting an attribute. Finally, hooks permit you to run scripts in response to specific changes taking place in a repository. Further information on the various properties can be found in the Book of Git, which is accessible via **bit.ly/1Mxk9Hu** and **bit. ly/1tOhgtG**. Be aware that config files are PlainText – you can always modify them with gedit if you distrust the work performed by the config command.

4 Essential Git tools ADD IMPRESSIVE FEATURES TO YOUR GIT WORKFLOW

EGit eclipse.org/egit
Command line git is so Seventies. Integrating the version control system with an IDE makes work easier. Eclipse does not support Git out of the box but EGit solves this problem effectively.

GitHooks bit.ly/1I19ccZ
VCS systems should be integrated into the development workflow so that unit tests can be run as new code is checked in. GitHooks lets you run arbitrary scripts in response to repository events.

Git-Extras bit.ly/1H1U772
This frequently maintained package contains a group of scripts adding all kinds of interesting features to Git. Take a look at its documentation to find out more – you will save time in the long run.

GitK and friends bit.ly/1LYfZZ7
If IDEs like Eclipse or Visual Studio do not interest you, a dedicated Git browsing utility might suit. Unix heads use gitk, while Windows developers are best served with TortoiseGit.
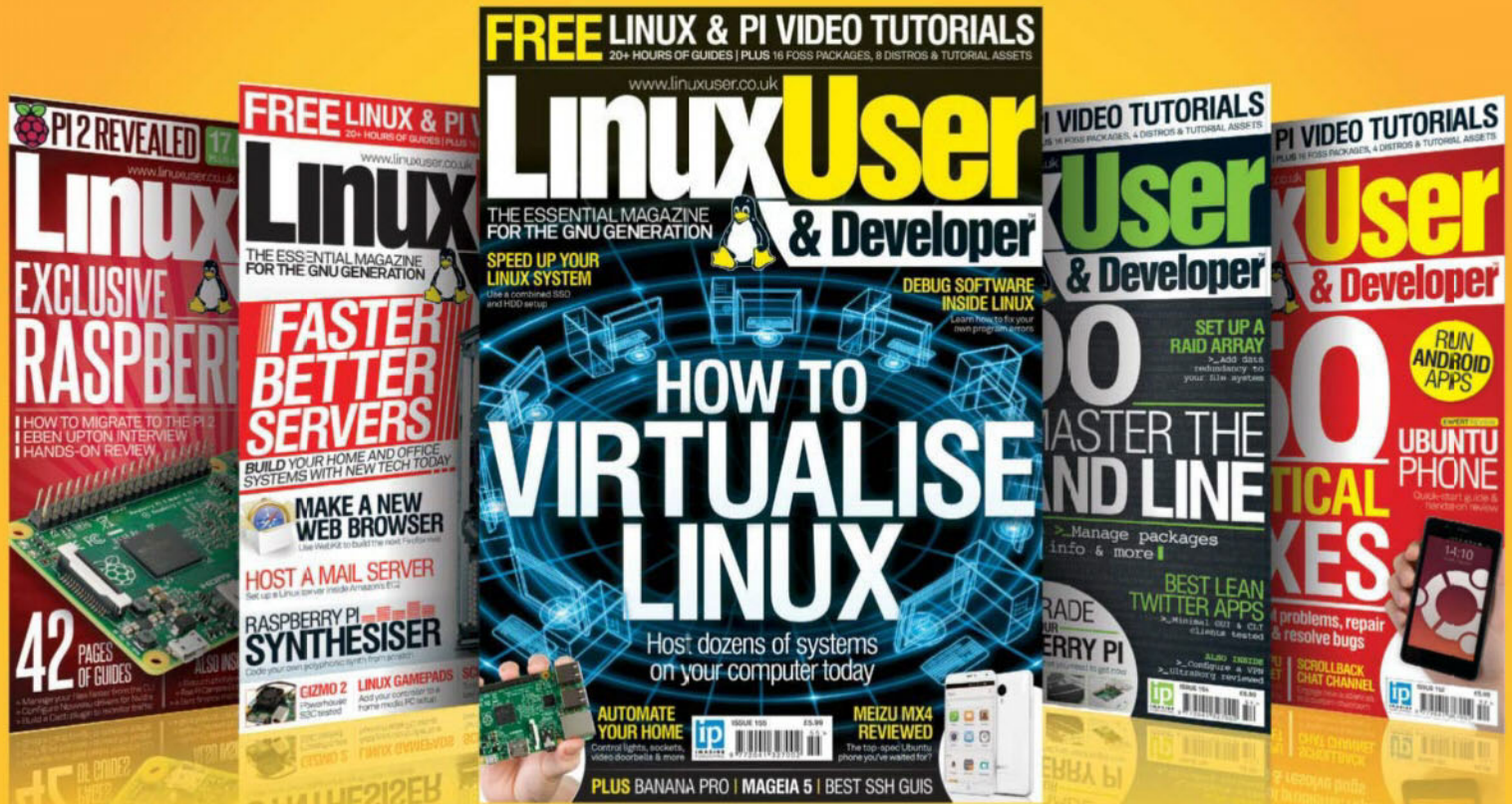
Customise maps with the Google Places API
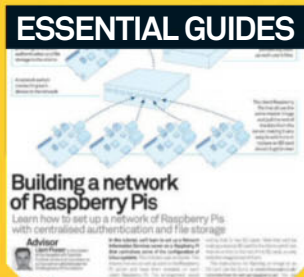
Use Street View and Google Maps to create a more immersive map experience that takes up less bandwidth

oogle Maps celebrated its tenth birthday in 2015. Ten years of sustained effort has resulted in the de facto map application both on the web and on mobile devices. Part of its success is due to the ability for people to embed maps within their own sites. This quickly made its interface familiar and is now ubiquitous on contact pages the web over. The Google Maps JavaScript library offers more functionality than simply a map and a marker.

The Places API can be used to make four types of requests: nearby, text, radar and place details. We'll be covering all but the radar search which is used to return a large list of places within a radius but without much detail. Nearby is similar in that it takes a radius and specific types of places but provides more detail on each of them. A text search is useful for organic searching, like a free text field.

We'll use the Places API in a few ways that aim to give you a solid understanding of how to use it and ideas to enhance your sites. First, we're going to build a simple text box that will allow users to see nearby places without a map. Then we'll build a split map and Street View interface which will update as the user pans and provide information on the markers they click on.

1. Create index.html

Start by writing some HTML linking normalize.css and our own stylesheet. The custom CSS floats both .map-areas and sets them to 50 per cent of the available width. To prevent images within Google Map windows from being too wide we set a max-width on them by targeting .gm-style-iw img.

2. Write markup and link scripts

Within our index.html file we'll add a few divisions which will hold the Google Map, the Street View and an information area. To include the Places API from Google

Maps a query parameter of libraries is added. We're using version 3.21, a changelog can be found at **bit.ly/1IYCvPD**.

3. Attribute to Google

When using the Places API without a map you need to attribute it to Google. A ZIP file is provided from **developers.google.com/places/webservice/policies** with a range of images for different resolutions and contrasts. You should also reference Google's Privacy Policy and Terms of Use in a footer.

```
<img src="images/powered-by-google-on-white.
png" alt="Powered by Google.">
```

4. Setup and initialisation

Create a file called 'places-dropdown.js', this is where we'll write the module which will list nearby places in a select box. JQuery isn't included in this project but Google Maps provides a convenient abstraction for adding event listeners. It's simple to use but more verbose than jQuery's version.

```
(function (google) {
'use strict';
var Places;
function initialise () {
/* next step */
}
google.maps.event.addDomListener(window,
'load', initialise);
})(google);
```

5. Start the Places service

SetMap won't be called straightaway, we'll call it once we know if we have the user's location or not. We're not displaying a map but a virtual element is still needed to pass to the Places service. This element only exists in memory so access is much faster than one in the DOM.

```
function setMap (center) {
var div = document.createElement('div');
var map = new google.maps.Map(div);
Places = new google.maps.places.
PlacesService(map);
getTextPlaces(center, 'web');
}
```

6. Create the form tag

Still within the initialise function, we need to work out where the centre of the map should be. By default we've set it to the latitude and longitude coordinates for London. If the user's browser has a browser with geolocation then it'll request access to it and provide their coordinates.

```
var center = new google.maps.LatLng(51.5072,
0.1275); // London
if ('geolocation' in navigator) {
navigator.geolocation.
getCurrentPosition(function (position) {
center = new google.maps.LatLng(position.
coords.latitude, position.coords.longitude);
setMap(center);
});
} else {
setMap(center);
}
```

Change the map's look
If your website has a specific visual style then you can use custom overlays and icons to visually integrate your unique style by going to bit.ly/1IN8B2m.
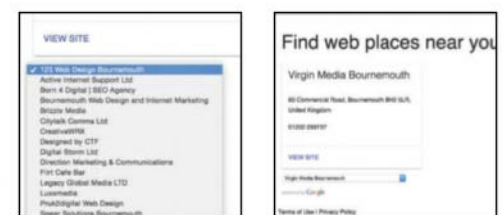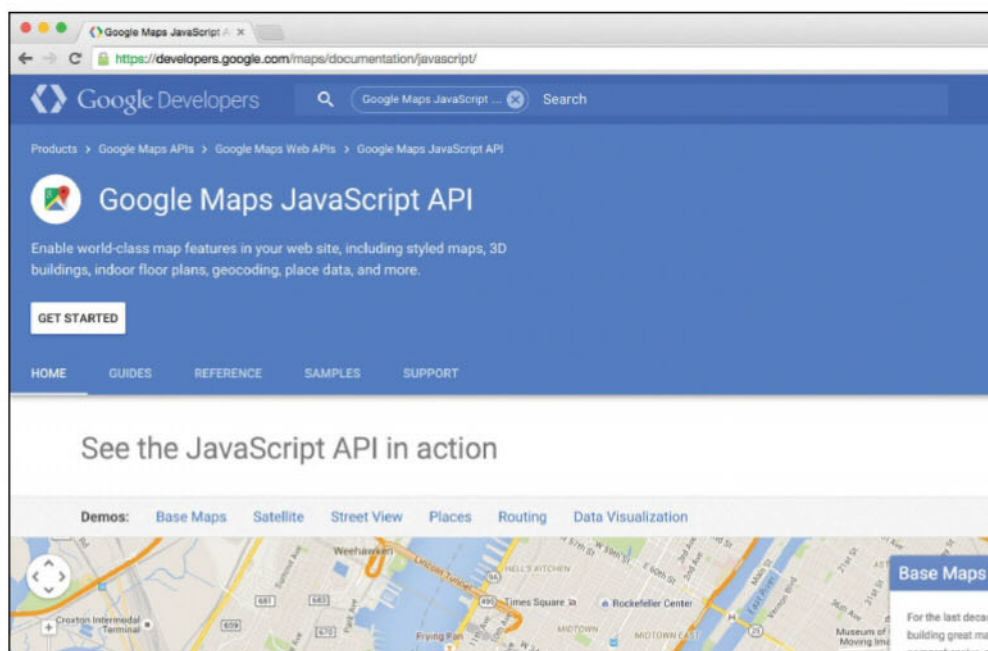
Left
Depending on the libraries you specify, Google Maps dynamically includes what you need. We're using the experimental version

Top left
Once the Places API has returned nearby web places we display them in this dropdown

Top right
When the user selects a place we get its details using the Places details service which we then show here

7. Perform a text search

One of the searches that Places lets you perform is a simple text search. We're passing 'web' so it'll look for all places that have tagged themselves as 'web'. The radius is in metres so in this case, one kilometre. The textSearch service requires a callback which receives the data.

```
function getTextPlaces (location, query) {
var request = {
location: location,
radius: 1000,
query: query
};
Places.textSearch(request, callback);
}
```

8. Alphabetise the results

The callback is passed the results and status respectively. Now check that the status is okay. If it is, then create a select element and a new array of alphabetised results (they come unordered) using localeCompare. This ensures that a precedes b, and so on.

```
function callback (results, status) {
if (status === google.maps.places.
PlacesServiceStatus.OK) {
var select = document.
createElement('select');
var sortedResults = results.sort(function
```

Manage variables

There are many global variables in map-street.js which can become hard to maintain. In larger applications it's a good idea to use getters and setters to avoid accidentally overwriting them.

```
(a, b) {
return a.name.localeCompare(b.name);
});
/* next step */
}
}
```

9. Add options to dropdown

Now the results are alphabetised, loop through them and create a new 'option' element for each one and set the index as the value. As we go along we append them to the select element. After all the option elements have been appended as children to the select element it is time to add it to the page.

```
for (var i = 0; i < sortedResults.length;
i++) {
var option = document.
createElement('option');
option.value = i;
option.innerHTML = sortedResults[i].name;
select.appendChild(option);
}
document.body.appendChild(select);
```

10. Build up details to show

Within the closure – so that sortedResults is in scope – we'll make use of Google's event management again. This time we will listen for changes to the dropdown and perform a getDetails search. That then returns a formatted address, telephone number, website, images and many other useful properties.

```
google.maps.event.addDomListener(select,
'change', function (event) {
Places.getDetails(sortedResults[event.
target.value], function (details, status) {
var info = document.getElementById('info');
```

```
info.innerHTML = '';
info.innerHTML += '<p>' + details.adr_
address;
info.innerHTML += '<p>' + details.formatted_
phone_number;
info.innerHTML += details.website ? '<a
href="' + details.website + '">' + details.
website + '</a>' : '';
});
});
```

11. Create map-street.js

We've demonstrated that the Places API can be used to create a list of options without having to display a full map which is useful when you have limited bandwidth or don't want to give much prominence to a map. We'll move on to a split map/street view app so create a new file, 'map-street.js'.

```
(function (google) {
var map,
panorama,
infowindow,
StreetView,
Places,
TYPES = ['book_store', 'art_gallery',
'cafe'];
google.maps.event.addDomListener(window,
'load', initialise);
/* next step */
})(google);
```
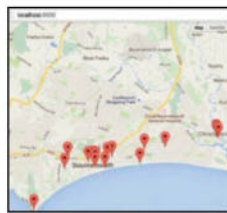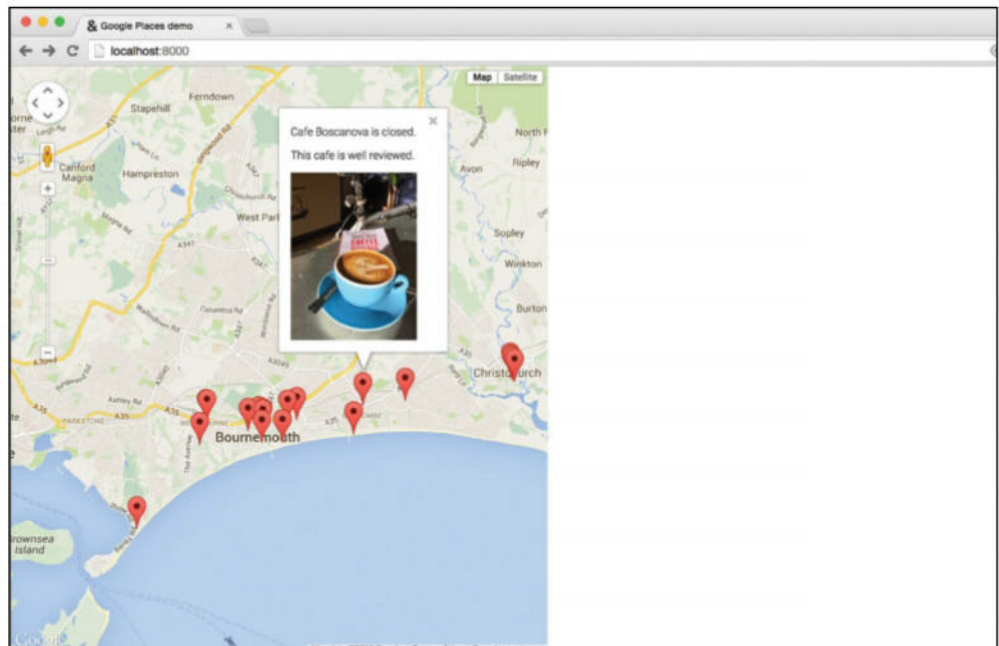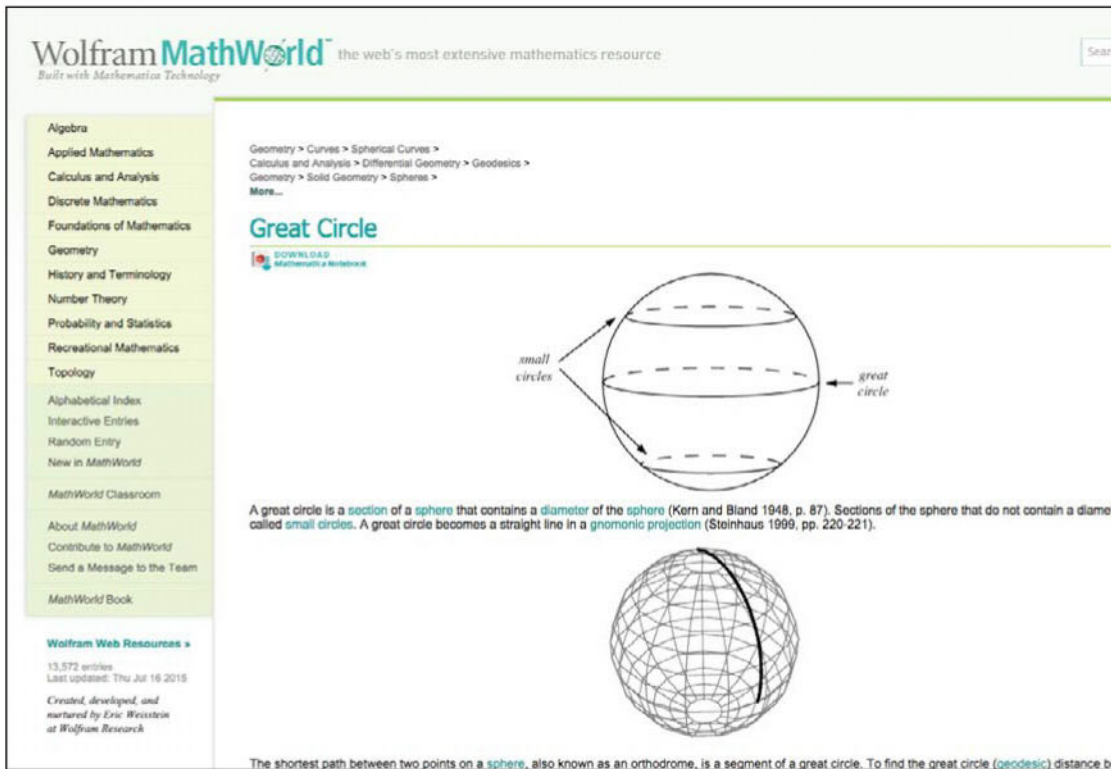
12. Initialise StreetViewService

Similar to before, the initialise function is executed when the page is loaded. At this point the StreetViewService can be instantiated. This service provides all of the methods and properties to interact with street views.
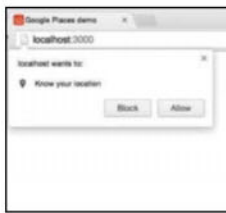
Top left
The site asks for the user's location (if it's available) and centres the map on them

Top right
Once the map tiles have loaded, the idle event triggers the service to make a request and drop the markers

Right
Clicking a marker opens an information window with some details about that place; you can put any HTML inside

```
function initialise() {
StreetView = new google.maps.
StreetViewService();
var center = new google.maps.LatLng(51.5072,
0.1275); // London
/* next step */
}
```

13. Get the user's location

Obtaining the user's position we must use 'getCurrentPosition'. This is asynchronous so requires a callback function for us to handle the outcome. You can optionally require high accuracy by passing an object and a time-out if you like.

```
if ('geolocation' in navigator) {
navigator.geolocation.
getCurrentPosition(function (position) {
center = new google.maps.LatLng(position.
coords.latitude, position.coords.longitude);
setMap(center);
});
} else {
setMap(center);
}
```

14. Set up the map and Places

To show the map we give it a reference to #map and centre it on the coordinates calculated above. A different type of event listener is used here, a map listener and not a DOM listener. The idle event fires when the map stops loading new tiles, eg after first load or when panning.

```
function setMap (center) {
map = new google.maps.Map(document.
getElementById('map'), {
center: center
});
Places = new google.maps.places.
PlacesService(map);
infowindow = new google.maps.InfoWindow();
google.maps.event.addListener(map, 'idle',
function () {
getNearbyPlaces(map.getCenter());
});
}
```

15. Configure Street View

Carrying on within setMap, we'll create a Street View panorama in a similar fashion to the map. First, pass it a reference to an element and some configuration options. Then to link them, call setStreetView with the panorama.

```
var panoramaOptions = {
position: center
};
panorama = new google.maps.
StreetViewPanorama(document.
getElementById('pano'), panoramaOptions);
map.setStreetView(panorama);
```

16. Find nearby places

The zoomToRadius function can be found at **stackoverflow.com/a/3527136**. It converts what the user can see into a radius to get enough results to fill the map.

Google allows you to search for various 'types' of places which are documented at **bit.ly/1HXkInx**.

```
function getNearbyPlaces(location) {
var request = {
location: location,
radius: zoomToRadius(),
types: TYPES
};
Places.nearbySearch(request, callback);
}
```

17. Handle results from search

When the search request is resolved it fires 'callback'. First, check that the results are useable by checking that it's the 'OK' status. We're going to create a marker for each result. Although not the most efficient way to iterate, forEach is used for its readability and conciseness.

```
function callback(results, status) {
if (status === google.maps.places.
PlacesServiceStatus.OK) {
results.forEach(createMarker);
}
}
```

18. Create the marker

Google Maps makes it simple to add new markers, we just have to tell it which map to associate it and so on. To add the marker within the Street View, use the code below and replace 'map' with 'panorama'.

```
function createMarker(place) {
var mapMarker = new google.maps.Marker({
```

```
map: map,
position: place.geometry.location,
title: place.name
});
}
```

19. Listen to marker clicks
When a user clicks a marker they expect something to happen, usually additional information. To facilitate this use addListener with the two markers we've created for the main map and Street View panorama. All events are listed at bit.ly/1OR2HMw.

```
google.maps.event.addListener(mapMarker,
'click', showInfoWindow);
google.maps.event.addListener(panMarker,
'click', showInfoWindow);
```

20. Show information window
The window for each marker will show: if the place is open or closed, an image of the place, and if the place is well reviewed or very well reviewed. By setting the infoWindow's content to null first, the content of the last one clears while details load for this location.

```
var showInfoWindow = function() {
var open = place.opening_hours && place.
opening_hours.open_now;
var msg = open ? 'is open' : 'is closed';
infowindow.setContent(null);
infowindow.open(map, this);
/* next step */
};
```

21. Get details on a place
The most comprehensive request that Places gives you access to is 'getDetails'. This takes a single place (as you received it from a previous search) and gives a wealth of information on that establishment. Build up a string with HTML to append to the info window to show this data.

```
Places.getDetails(place, function (details,
status) {
var html = '<p>' + place.name + ' ' + msg +
'.' + '</p>';
});
```

22. Display a place's image
If any photos are available we'll display the first one. The process is a little bit unusual because you have to call a method called getUrl rather than being provided as a property. You pass this method a maximum width and height for the image so they're optimised for the dimensions you'll display.

```
if (details.photos) {
var url = details.photos[0].getUrl({
maxWidth: 400,
maxHeight: 200
});
html += '<img src="' + url + '">';
}
```

23. Show a review breakdown
If there are any reviews available then we'll show a simple breakdown to indicate how well reviewed this place is. First, find out what the total of each rating is added together (using reduce adds the previous number to the current one). Then divide that total by the number of reviews to find the mean.

```
if (details.reviews) {
var total = details.reviews.reduce(function
(previous, current) {
return previous + current.rating;
}, 0);
var mean = total / details.reviews.length;
```

```
/* next step */
}
```

24. Review scores
The mean can now indicate review status. A tweak is needed as types are separated by underscores, not spaces (eg art_gallery) so replace these. Once the data's calculated set the window content to the HTML string.

```
var type = details.types[0].replace('_', '
');
if (mean >= 3 && mean < 4.5) {
html += '<p>This '+ type +' is well
reviewed.</p>';
} else if (mean >= 4.5) {
html += '<p>This '+ type +' is very well
reviewed.</p>';
}
infowindow.setContent(html);
```

25. Set the Street View panorama
To set the Street View panorama to the place selected, use getPanoramaByLocation. This takes a location, a radius in metres and a callback. The radius is how far to look for a matching panorama and isn't always accurate. If we have one update panorama with setPano and an ID.
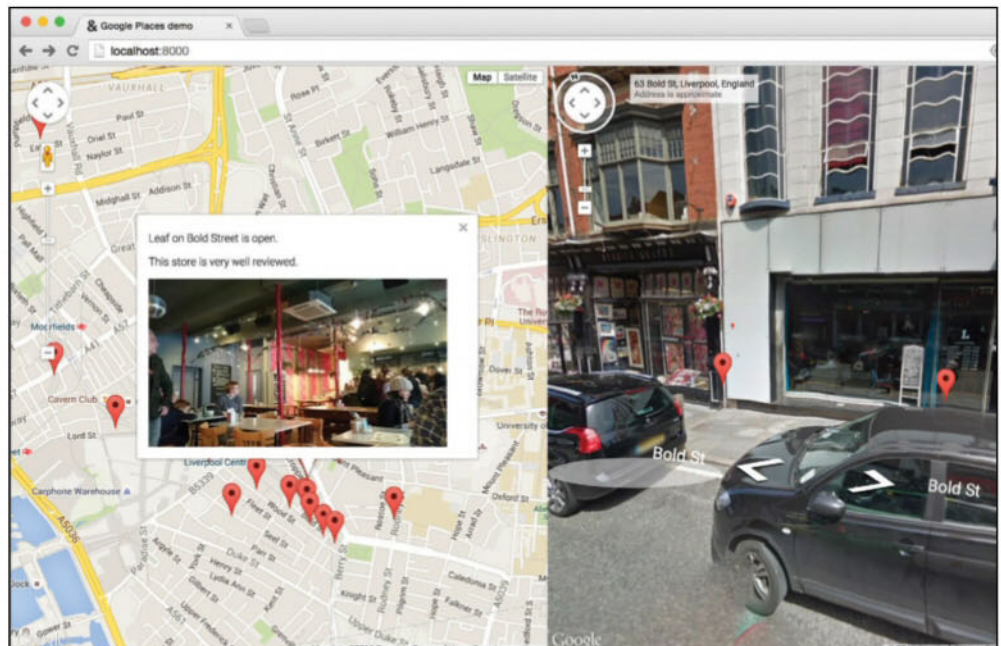
```
StreetView.getPanoramaByLocation(place.
geometry.location, 50, function (data,
status) {
if (status === google.maps.StreetViewStatus.
OK) {
panorama.setPano(data.location.pano);
} else {
console.log('No street view panorama
found');
}
});
```
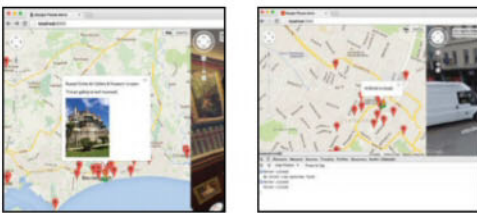

Top left
Street View panoramas look impressive but don't take much more effort to set up than a traditional Google map

Top right
Clicking on a marker within the Street View triggers the same behaviour as clicking on the map interface

Right
Markers are displayed within the Street View because they've been linked to the map on the left

Develop a web app quickly with Lucee

Say hello to the Lucee language, the latest CFML engine, and quickly build a powerful dynamic application
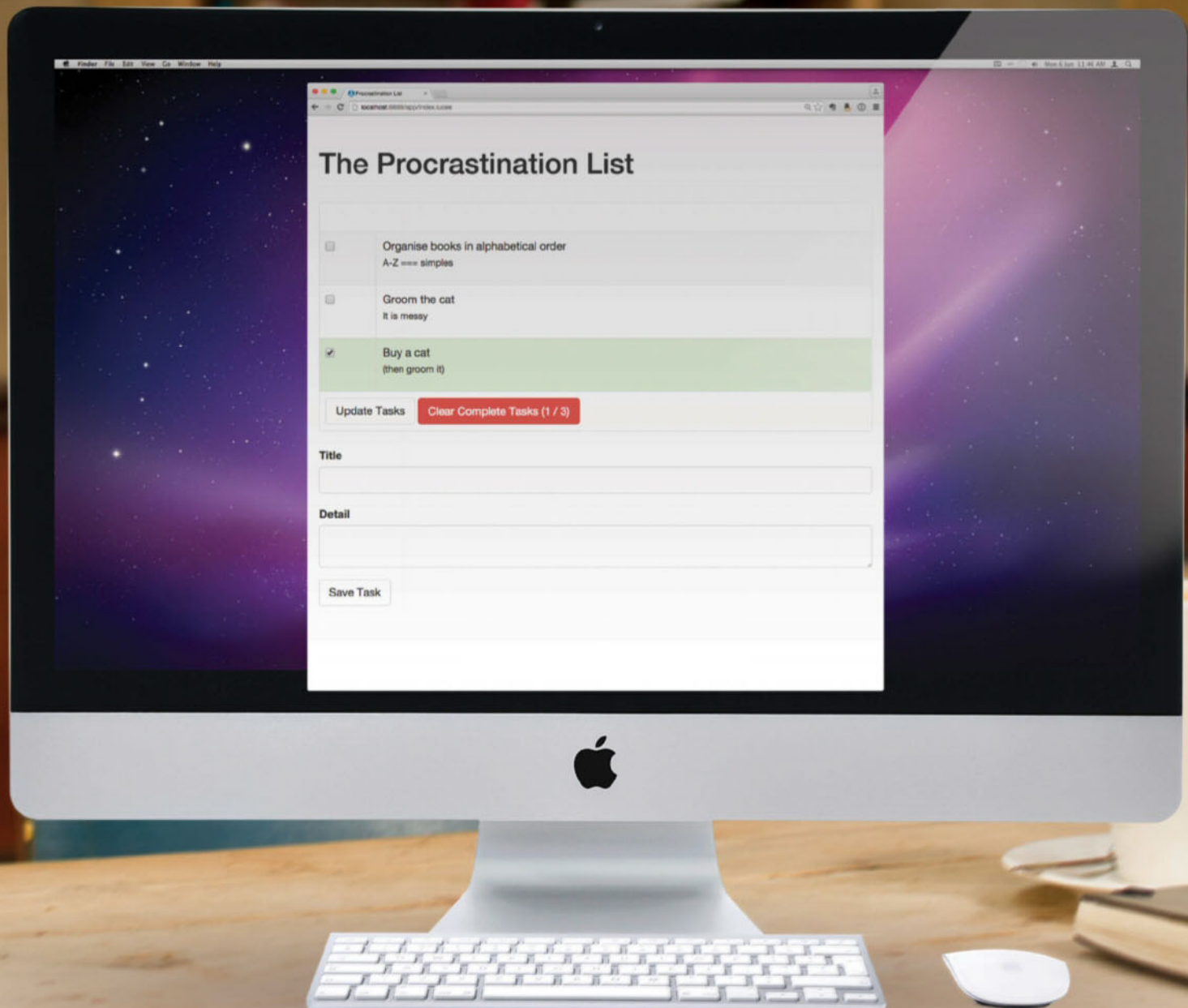
To some, CFML (ColdFusion Markup Language) may not mean anything. To others it may be perceived as an out-of-date language no longer used. In fact CFML is 20-years-old this year and it was born the same year as PHP and JavaScript. If you haven't yet experienced building a CMFL application yet, then now is your chance to do so.

Lucee, a completely open source CFML engine, was released in January 2015. As a fork from an existing CFML engine Lucee did not have to start from scratch and had a fantastic core engine to build upon.

In this tutorial we will download and install an Express edition (self-contained) version of Lucee 5, which includes all of the latest additions to the code syntax and language. We will develop a simple example application using the new Lucee dialect and file extensions, and we will then show an example of how to interact with the application scope for persistence. We will use Lucee's member functions to check for variables within certain scopes and lengths of arrays.

We will also look into creating RESTful API resources using Lucee and mapping components to match REST paths. We will see how to manage sending arguments in the URL as well as dealing with both GET and POST requests to the API.

1. Download Lucee

The Lucee language is available for us to download from a number of platforms in stable and beta versions. Just head on over to **lucee.org/downloads.html** to do just that. We will be selecting Express version 5 to use in this tutorial, which is a version that will work across all operating systems. Now you can just unpack the archive file and use your terminal or command prompt to start up the server.

```
./startup.sh
or for Windows:
./startup.bat
```

2. Default page and admin

After starting up the Lucee engine you will be able to access the server in your browser via **http://localhost:8888**. The default welcome page that appears here will have some useful links to guide you through the language, and it will also have two important links that will take you right through to the server and web administrators too.

3. Application component

Create a new file in the root of the new directory called 'Application.lucee'. This component will hold the application-specific variables and configuration for this subapp. Create the name using a hashed version of both the current path and substring value to help ensure that it is unique.

```
component {
  this.name = hash(GetDirectoryFromPath('./'))
  & '_procrastination_app';
}
```

4. Run onApplicationStart

The application framework will support multiple event-driven functions which we are then able to interact with. OnApplicationStart will run the very first time that the application instantiates. Here we will then define two variables that are assigned to the application scope, and these are made available for us to access throughout the entire application.

```
boolean function onApplicationStart() {
  application.tasks = [];
  application.completeTasks = "";
```

```
  return true;
}
```

5. Directory index

Create a new file called 'index.lucee' in the directory. This will be the default index page for our application. To start we'll simply request a data dump of everything available within the application scope (created from the application configuration file). You can use the tag format or script syntax to do this.

```
<:script>
dump(application);
</:script>
```

6. Task model definition

Create a new directory of 'model', and inside of this create a new file, 'task.lucee'. This new component contains properties for our model defined, setting the type, name and default value attributes for each. The getters and setters will be created for us thanks to the accessors=true attribute.

```
component accessors="true" {
  property type="numeric" name="id";
  property type="string" name="title"
  default="";
  property type="string" name="content"
```

Lucee 5 beta

In this tutorial we have been using the latest version of Lucee 5, still in beta at time of writing but almost production ready. The new Lucee dialect code format and file extensions are only available in version 5.
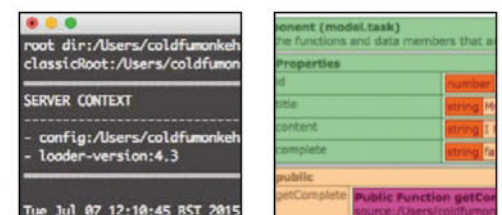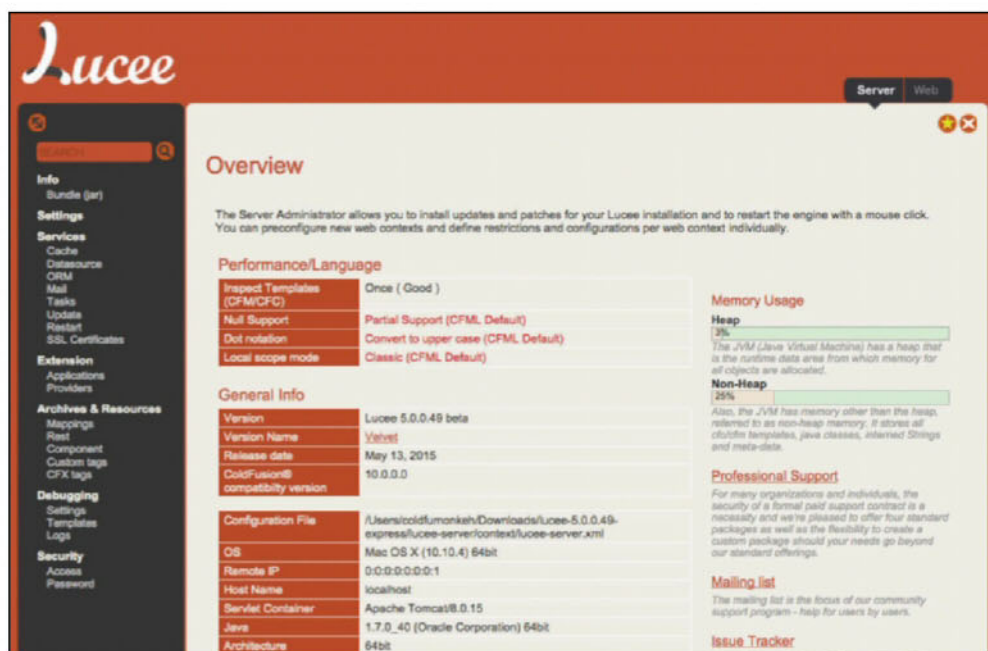
Left
CFML server management and configuration is a relatively simple process thanks to Lucee and its server and web admin contexts

Top left
Open your terminal or command prompt window and start the Lucee Express edition engine using the platform-appropriate start-up script

Top right
Our model properties and the accessors=true attribute generates all of the GET and SET methods we need to populate our model, shown here as a dumped object

```
default="";
property type="boolean" name="complete"
default="false";
}
```

7. HTML layout

Open index.lucee and define the base HTML layout for the application. We're using Bootstrap for structure here. Note the output tags wrapping the entire template. These will deal with any string wrapped by # characters as a variable for translation.

```
<:output>
<!DOCTYPE html>
<html lang="en">
<head>
<meta charset="utf-8">
<title>Procrastination List</title>
<link rel="stylesheet" href="css/bootstrap.
min.css">
</head>
<body>
</body>
<script src="https://ajax.googleapis.com/
ajax/libs/jquery/1.11.3/jquery.min.js"></
script>
```

CFML from the CLI

CommandBox is a stand-alone native command line interface tool written in CFML with package management and much more. It also generates embedded Lucee servers for your local development work. You can find out more by going to **bit.ly/1CqTokB**.

```
<script src="js/bootstrap.min.js"></script>
</html>
</:output>
```

8. Form definition

Create a new form now that will post back to the index.lucee page. This will have a text input field with the name attribute set to title and a textarea field with the name set to content. The submit button will have the name new_task which we will use to identify a submission. Then finally, the variable #strFlash# will be used to display any errors that appear.

```
<div class="container">
<h1 class="page-header">The Procrastination
List</h1>
#strFlash#
<form method="POST" action="index.lucee"
class="form-horizontal">
<div class="form-group">
<div class="col-sm-offset-1 col-sm-11">
<button type="submit" name="new_task"
class="btn btn-default">Save Task</button>
</div>
</div>
</form>
</div>
```

9. Script block

Create a new script block at the top of the index.lucee file. Create a default strFlash variable with an empty value. An if statement will check for the existence of the new_task button in the form scope (available after a form submission). If it exists we can then process the submitted values accordingly.

```
<:script>
strFlash = "";
```

```
if ( structKeyExists(form, 'new_task') ) {
}
</:script>
```

10. New model instantiation

If both the title and content values are present in the form submission then we will instantiate a new task model, and we will then populate the properties with the values and insert that component into the task array using the built-in arrayAppend function. If either of the title and content are missing then we'll create the warning message for output.

```
if ( len(form.title) && len(form.content) )
{
task = new model.task(
title=form.title,
content=form.content,
id=arrayLen(application.tasks)+1
);
arrayAppend(application.tasks, task);
} else {
strFlash = '<div class="alert alert-
warning">Please provide a title and task
detail.</div>';
}
```

11. Display the list

Below the header, we will now add some code to detect if we have any records saved in the array. ArrayLen is a built-in CFML function to check for the length of the provided array. If true, the following HTML panel and table will be displayed to the user.

```
<:if arrayLen(application.tasks)>
<div class="panel panel-default">
<table class="table table-bordered table-
hover">
```
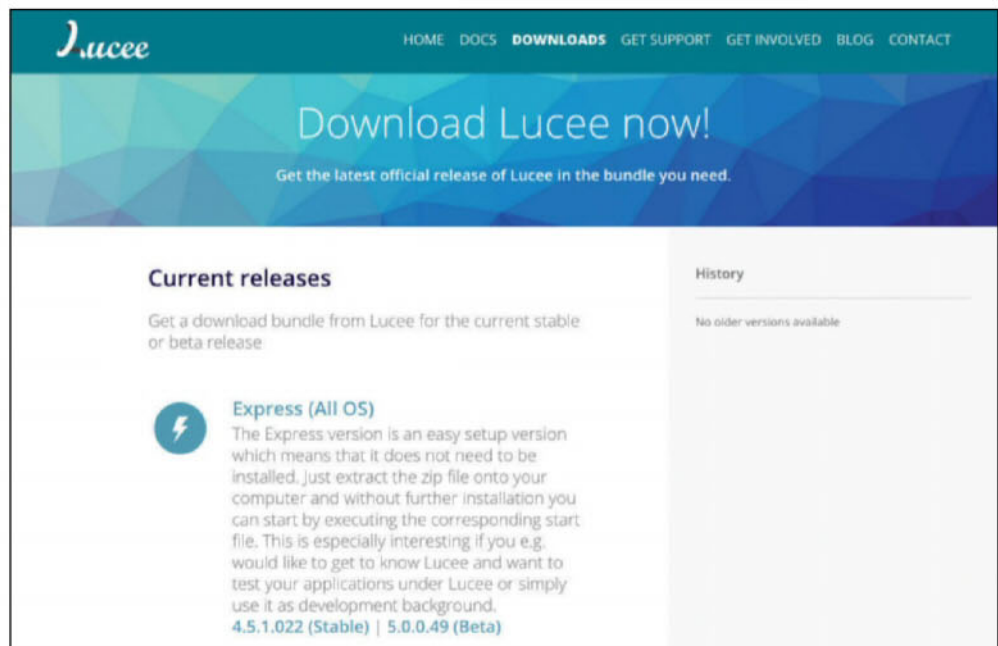
Top left
Lucee has been open and available to the community since its release and welcomes pull requests and community interaction
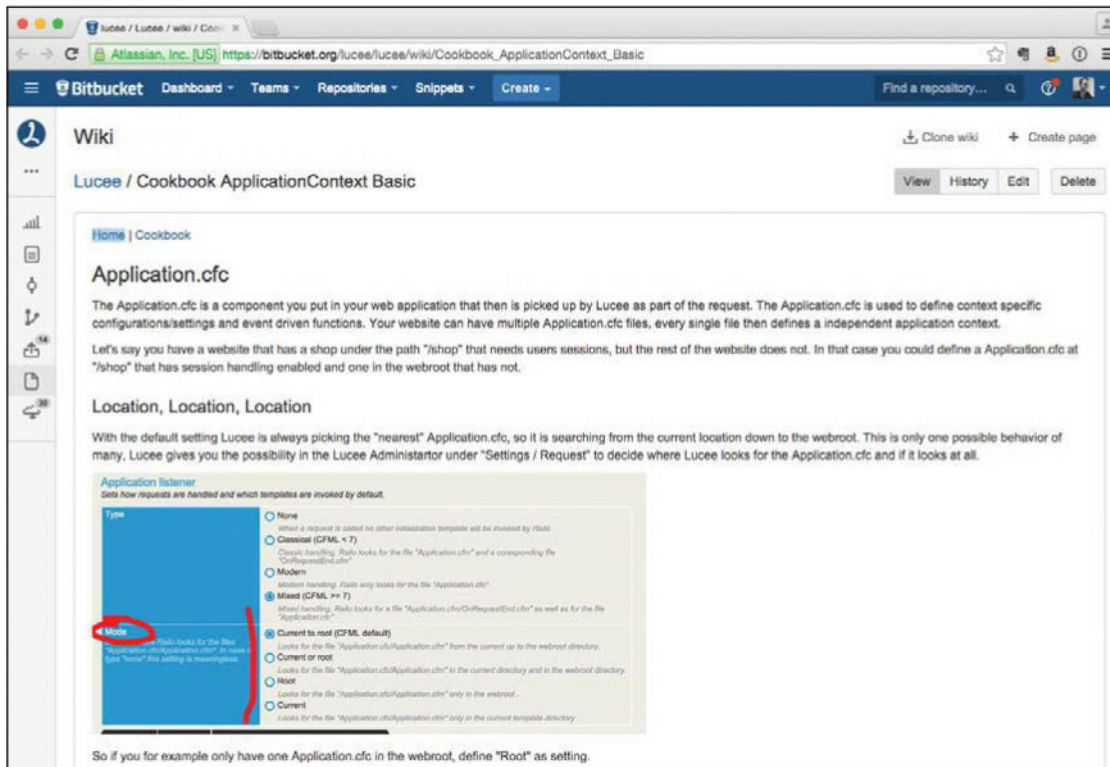
Top right
Full documentation for the language tags and functions are available from the Lucee site, complete with all attribute variations and options

Right
Lucee is available to download for Windows and Linux-based operating systems, in full installer versions or Express editions

```
<thead>
<tr>
<th colspan="2"> </th>
</tr>
</thead>
<tbody>
</tbody>
</table>
</div>
</:if>
```

12. Loop over collection

Place a new form between the table body tags to post back to index.lucee. Within this form loop over the tasks array from the application scope. The checkbox id and value hold the task id and the conditional statement will populate the checkbox if already marked as complete.

```
<:loop collection=application.tasks
item="task">
<tr class="<:if (application.tasks[task].
getComplete())>success</:if>">
<td>
<input type="checkbox" name="task"
id="check[#application.tasks[task].
getId()#]"
<:if (application.tasks[task].
getComplete())>checked</:if>
value="#application.tasks[task].getId()#" />
</td>
<td>
<p>#application.tasks[task].getTitle()#<br
```

```
/>
<span class="small">#application.
tasks[task].getContent()#</span>
</p>
</td>
</tr>
</:loop>
```

13. Update the tasks

Include the following buttons before the closing form tag in the table. Once an update has been processed and any tasks are complete, check the length of the application scope completeTasks list variable. If it holds data, display the button to clear those items from the list.

```
<tr>
<td colspan="2">
<input type="submit" name="update_tasks"
class="btn btn-default" value="Update Tasks"
/>
<:if listLen(application.completeTasks)>
<a href="/app?clearcomplete=true" class="btn
btn-danger">Clear Complete Tasks
(#listLen(application.completeTasks)# /
#application.tasks.len()#)</a>
</:if>
</td>
</tr>
```

14. Handle updates

Back at the top of index.lucee we will add another conditional statement within the script block. This conditional statement will check for a form update submission and it loops over the tasks array, setting each to incomplete. After that, it will then loop over the submitted tasks (using the checkbox ids) and set those tasks to complete.

```
if ( form.keyExists('update_tasks') ) {
strTasks = "";
for( task in application.tasks ) {
task.setComplete(false);
if ( structKeyExists(form, 'task') ) {
if (listContains(form.task, task.getId())) {
task.setComplete(true);
}
strTasks = form.task;
}
}
application.completeTasks = strTasks;
}
```

15. Clear completed tasks

If the user submits the button now to clear the completed tasks, the conditional statement will check for the existence of the clearcomplete value that was sent in the URL. This will then loop over all tasks and, once it has found the matching task using the ID, it will go on to delete it from the array before sending the user back to the index page.

```
if ( structKeyExists(url, 'clearcomplete') )
{
for( task_id in listToArray(application.
completeTasks) ) {
```

```
for( task in application.tasks ) {
if ( task.getId() EQ task_id ) {
arrayDelete(application.tasks, task);
}
}
}
application.completeTasks = "";
location('/app', false);
}
```

16. Creating REST resources

Lucee offers an incredibly easy way to create and generate RESTful resources, written using the familiar component structure. Create a new directory called 'rest' within your project, inside of which we will place all of our components. Create a file called 'random.lucee' with the following code. The rest path attribute dictates the URL that this component will respond to when we call the API.

```
component restpath="/random" rest="true" {
}
```

17. Initial GET Request

Now we will define the routes and responses for each API resource within the open component block. First let's create a new remotely accessible function that responds to a GET request. This simple example returns a random number nested inside of a JSON response. The function name has no direct impact on the resource, but ideally it should relate to the purpose of the function.

```
remote any function getRandomNumber()
httpmethod="GET" {
return {'random_number':
randRange(1,1000000) };
}
```

18. Manage URL parameters

Create a new GET resource function in the component to accept a single argument or parameter. The restargsource attribute dictates that the argument will be part of the path and we define the argument value as sent_value. This response uses CFML's built-in dateTimeFormat() method to handle formatting the current time returned from the now() function.

```
remote any function returnResponse(string
sent_value restargsource="Path")
httpmethod="GET" restpath="{a}"
{
return {
'request_made': dateTimeFormat(now(), 'dd/
mm/yyyy HH:NN'),
'value': arguments.a
};
}
```

19. Handle POST requests

Create another remote method to handle our POST requests. The restargsource attribute will be set to Form, expecting the parameter posted_value in that submission. return the submitted value, the current datetime value and the entire arguments scope, which could be used for API response debugging.

```
remote any function postResponse(string
posted_value restargsource="Form")
httpmethod="POST" {
return
{
'request_made': dateTimeFormat(now(), 'dd/
mm/yyyy HH:NN'),
'you_submitted': arguments.posted_value,
'form_data': arguments
}
}
```

20. Admin configuration

The REST resources need to be defined and mapped in the Lucee administrator. Log in to the web content admin and select Archives & Resources>Rest. Create a new mapping virtual name (use api for brevity) and point the physical to the directory location of the components.

21. Test POST submission

Create a test lucee file in the project root to test the API. Create a new script block and make an HTTP POST request to the local API address. At least one of the http param lines, set as a form field, should be the value expected by the method. Finally dump out the cfhttp result for visual debugging.

```
<:script>
http url="http://localhost:8888/rest/api/
random/" method="POST"
{
http param name="posted_value" value="Lucee
is powerful" type="formField";
}
dump(cfhttp);
</:script>
```
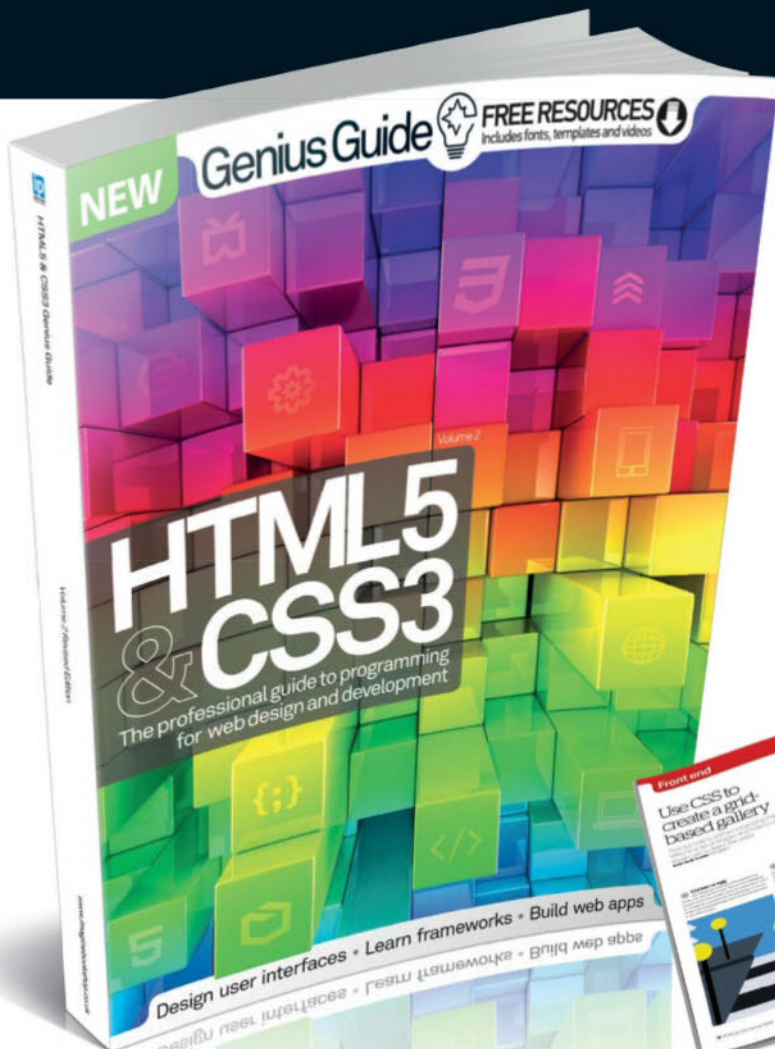
Introducing the Lucee dialect

Lucee 5 contains an updated enhanced language framework and syntax that is known as the Lucee dialect (or occasionally referenced as LuceeLang). The dialect is based on the original concepts of CFML. As a relatively new engine it continues to support CFML and the ecosystem around it, which includes compatibility support for existing versions of CFML engines including Adobe's ColdFusion engine. As well as helping to maintain backwards-compatible syntax for existing applications it also wants to help drive the CFML environment and update the syntax and available methods and functions. This is where the Lucee dialect comes into play. Find out more about this dialect by going here: **bit. ly/1KaNiF2**.

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✉ webdesigner@imagine-publishing.co.uk

Name and URL	Package	Phone Number	Cost per Year	Web Space	Monthly Bandwidth	POP3 Accounts	Database Support	Shopping Cart	Virus Filter	Firewall	Phone Support	Email Support	Web Control Panel	Service Level Agreement
111WebHost (111webhost.com)	Budget Web Hosting Pack	N/A	£10	1GB	1GB	5	✓	✗	Add-on	N/A	✗	✓	✓	✗
111WebHost (111webhost.com)	WordPress Web Hosting Pack	N/A	£20	5GB	2GB	100	✓	✓	Add-on	N/A	✗	✓	✓	✗
111WebHost (111webhost.com)	Start-up Web Hosting Pack	N/A	£25	5GB	Unlimited	100	✓	✓	Add-on	N/A	✗	✓	✓	✗
111WebHost (111webhost.com)	Unlimited Web Hosting Pack	N/A	£50	Unlimited	Unlimited	Unlimited	✓	✓	Add-on	N/A	✗	✓	✓	✗
111WebHost (111webhost.com)	Unlimited Multi-site Web Hosting Pack	N/A	£300	Unlimited	Unlimited	Unlimited	✓	✓	Add-on	N/A	✗	✓	✓	✗
123-reg (www.123-reg.co.uk)	Starter	0845 859 0018	£29.88	1GB	5GB	20	✗	✗	✗	✓	✓	✓	✓	
123-reg (www.123-reg.co.uk)	Plus	0845 859 0018	£59.88	5GB	50GB	500	✓			✓	✓	✓	✓	
123-reg (www.123-reg.co.uk)	Pro	0845 859 0018	£107.88	10GB	100GB	750	✓			✓	✓	✓	✓	
123-reg (www.123-reg.co.uk)	Bus Pro	0845 859 0018	£179.88	20GB	Unlimited	1,000	✓			✓	✓	✓	✓	
123-reg (www.123-reg.co.uk)	Plus (MS)	0845 859 0018	£59.88	2GB	25GB	100	✓			✓	✓	✓	✓	
123-reg (www.123-reg.co.uk)	Pro (MS)	0845 859 0018	£107.88	5GB	50GB	500	✓			✓	✓	✓	✓	
123-reg (www.123-reg.co.uk)	Bus Pro (MS)	0845 859 0018	£179.88	10GB	150GB	1,000	✓			✓	✓	✓	✓	
2020Media (www.2020media.com)	Light User	0870 321 2020	£45	20MB	1GB	3	✓	✓	✓	✓	✓	✓	✓	
2020Media (www.2020media.com)	Everyday	0870 321 2020	£100	200MB	10GB	15	✓	✓	✓	✓	✓	✓	✓	
2020Media (www.2020media.com)	Business/Pro	0870 321 2020	£275	500MB	20GB	50	✓	✓	✓	✓	✓	✓	✓	
2020Media (www.2020media.com)	JAVA Tomcat	0870 321 2020	£300	100MB	3GB	15	✓	✓	✓	✓	✓	✓	✓	
2020Media (www.2020media.com)	ASP.Net	0870 321 2020	£275	100MB	3GB	15	✓	✓	✓	✓	✓	✓	✓	
4D Hosting (www.4dhosting.com)	Big Web Hosting	0207 183 0602	£60	5GB	Unlimited	20	✓	✓	✓	✓	✓	✓	✓	✓
4D Hosting (www.4dhosting.com)	Bigger Web Hosting	0207 183 0602	£120	10GB	Unlimited	75	✓	✓	✓	✓	✓	✓	✓	✓
4D Hosting (www.4dhosting.com)	Biggest Web Hosting	0207 183 0602	£180	20GB	Unlimited	100	✓	✓	✓	✓	✓	✓	✓	✓
4D Hosting (www.4dhosting.com)	Big VPS	0207 183 0602	£204	75GB	500GB	Unlimited	✓	✓	✓	✓	✓	✓	✓	✓
4D Hosting (www.4dhosting.com)	Bigger VPS	0207 183 0602	£360	100MB	1,000GB	Unlimited	✓	✓	✓	✓	✓	✓	✓	✓
4D Hosting (www.4dhosting.com)	Biggest VPS	0207 183 0602	£720	200MB	1,500GB	Unlimited	✓	✓	✓	✓	✓	✓	✓	✓
Blackfoot Hosting Ltd (www.blackfoot.co.uk)	Home	N/A	£40	500MB	5GB	5	✓	✓	✓	✓	✓	✓	✓	
Blackfoot Hosting Ltd (www.blackfoot.co.uk)	Business	N/A	£50	1GB	20GB	100	✓	✓	✓	✓	✓	✓	✓	
Blackfoot Hosting Ltd (www.blackfoot.co.uk)	eCommerce	N/A	£100	2GB	40GB	200	✓	✓	✓	✓	✓	✓	✓	
Blackfoot Hosting Ltd (www.blackfoot.co.uk)	Professional	N/A	£150	3GB	60GB	300	✓	✓	✓	✓	✓	✓	✓	
Blacknight (www.blacknight.com)	Minimus	35359 918 3072	£45	10GB	200GB	Unlimited	✓	✓	✓	✓	✓	✓	✓	✓
Blacknight (www.blacknight.com)	Medius	35359 918 3072	£79	20GB	400GB	Unlimited	✓	✓	✓	✓	✓	✓	✓	✓
Blacknight (www.blacknight.com)	Maximus	35359 918 3072	£45	30GB	600GB	Unlimited	✓	✓	✓	✓	✓	✓	✓	✓
Bravo14 (http://bravo14.co.uk)	Starter Linux	N/A	£130	2,000MB	2,000MB	10	✓	✓	✓	✓	✓	✓	✓	✓
Bravo14 (http://bravo14.co.uk)	Starter Windows	N/A	£20	2,000MB	2,000MB	10	✓	✓	✓	✓	✓	✓	✓	✓
Bravo14 (http://bravo14.co.uk)	Business Linux	N/A	£45	4,000MB	4,000MB	4,000	✓	✓	✓	✓	✓	✓	✓	✓
Bravo14 (http://bravo14.co.uk)	Business Windows	N/A	£45	4,000MB	4,000MB	4,000	✓	✓	✓	✓	✓	✓	✓	✓
Bravo14 (http://bravo14.co.uk)	Ultimate Linux	N/A	£60	Unlimited	Unlimited	Unlimited	✓	✓	✓	✓	✓	✓	✓	✓
Bravo14 (http://bravo14.co.uk)	Ultimate Windows	N/A	£60	Unlimited	Unlimited	Unlimited	✓	✓	✓	✓	✓	✓	✓	✓
Designwasp (http://designwasp.com)	Starter	0844 372 9848	£30	3GB	20GB	1,000	✓	✓	✓	✓	✓	✓	✓	
Designwasp (http://designwasp.com)	Home	0844 372 9848	£40	10GB	50GB	10,000	✓	✓	✓	✓	✓	✓	✓	
Designwasp (http://designwasp.com)	Business	0844 372 9848	£60	Unlimited	Unlimited	Unlimited	✓	✓	✓	✓	✓	✓	✓	
Designwasp (http://designwasp.com)	Windows Unlimited	0844 372 9848	£60	Unlimited	Unlimited	Unlimited	✓	✓			✓	✓	✓	
Designwasp (http://designwasp.com)	Windows Home	0844 372 9848	£40	10GB	50GB	1,000	✓	✓			✓	✓	✓	
Designwasp (http://designwasp.com)	CheapHost	0844 372 9848	£10	300MB	100MB	5	✗	✗	✗	✗	✓	✓	✓	
Digital Gibbon Ltd (http://digitalgibbon.com)	Personal	01865 589 990	£12	1GB	Unlimited	10	✓	✓		✓	✓	✓	✓	✓
Digital Gibbon Ltd (http://digitalgibbon.com)	Personal Plus	01865 589 990	£48	Unlimited	Unlimited	50	✓	✓		✓	✓	✓	✓	✓
Digital Gibbon Ltd (http://digitalgibbon.com)	Business	01865 589 990	£108	5GB	Unlimited	1000	✓	✓			✓	✓	✓	
Digital Gibbon Ltd (http://digitalgibbon.com)	Business Professional	01865 589 990	£132	Unlimited	Unlimited	Unlimited	✓	✓			✓	✓	✓	
eHosting (www.ehosting.com)	Starter	0844 999 4100	£23.88	1GB	25GB	10	✓				✓	✓	✓	✓
eHosting (www.ehosting.com)	Personal	0844 999 4100	£59.88	2.5GB	Unlimited	50	✓				✓	✓	✓	✓
eHosting (www.ehosting.com)	Expert	0844 999 4100	£95.88	5GB	Unlimited	250	✓				✓	✓	✓	✓
eHosting (www.ehosting.com)	Virtual	0844 999 4100	£227.88	50GB	Unlimited	Unlimited	✓			✓	✓	✓	✓	✓
Evohosting (www.evohosting.co.uk)	Starter	N/A	£29.99	500MB	1GB	3	✓	✓	✓	✓	✓	✓	✓	✓
Evohosting (www.evohosting.co.uk)	Home	N/A	£54.99	2.5GB	30GB	50	✓	✓	✓	✓	✓	✓	✓	✓
Evohosting (www.evohosting.co.uk)	Business	N/A	£79.99	6.5GB	Unlimited	Unlimited	✓	✓	✓	✓	✓	✓	✓	✓
Evohosting (www.evohosting.co.uk)	eCommerce	N/A	£159.99	30GB	Unlimited	Unlimited	✓	✓	✓	✓	✓	✓	✓	✓
Fasthosts (www.fasthosts.co.uk)	Personal	0808 168 6777	£32.87	5GB	Unlimited	50	✓		✓	✓	✓	✓	✓	

Featured host of the month: 111WebHost 111webhost.com

Getting more out of one of our quality listed hosting providers

111WebHost is a provider committed to making website hosting easy to use while offering the best possible value. It provides solutions for small- and medium-sized businesses as well as individuals – and web designers and developers are high on their list. 111WebHost offers a range of top-value packages starting at the ridiculously low price of £1 per month. For this, users get 1GB of webspace and 1GB of monthly traffic. For those looking for more, there is 5GB of webspace and unlimited traffic for just £2.50 a month. Unlimited webspace and traffic is available for just £5 a month. They also provide specialist hosting for WordPress, Joomla and Drupal.

NAME AND URL	PACKAGE	PHONE NUMBER	COST PER YEAR	WEB SPACE	MONTHLY BANDWIDTH	POP3 ACCOUNTS	DATABASE SUPPORT	SHOPPING CART	VIRUS FILTER	FIREWALL	PHONE SUPPORT	EMAIL SUPPORT	WEB CONTROL PANEL	SERVICE LEVEL AGREEMENT
Fasthosts (www.fasthosts.co.uk)	Business Bronze	0808 168 6777	£58.38	50GB	Unlimited	500	✓	Option	✓	✓	✓	✓	✓	✗
Fasthosts (www.fasthosts.co.uk)	Business Silver	0808 168 6777	£76.39	Unlimited	Unlimited	Unlimited	✓	Option	✓	✓	✗	✓	✓	✗
Fasthosts (www.fasthosts.co.uk)	Business Gold	0808 168 6777	£101.89	Unlimited	Unlimited	Unlimited	✓	✓	✓	✓	✗	✓	✓	✗
Fasthosts (www.fasthosts.co.uk)	WD Starter	0808 168 6777	£149.99	20GB	Unlimited	Unlimited	✓	Option	Option	✓	✗	✓	✓	✗
Fasthosts (www.fasthosts.co.uk)	WD Advanced	0808 168 6777	£199.99	Unlimited	Unlimited	Unlimited	✓	Option	Option	✓	✗	✓	✓	✗
Heart Internet (www.heartinternet.co.uk)	Starter Professional	0845 644 7750	£29.80	2.5GB	10GB	1,000	✗	✗	✗	✗	✗	✓	✓	✓
Heart Internet (www.heartinternet.co.uk)	Home Professional	0845 644 7750	£89.99	Unlimited	Unlimited	10,000	✓	✓	✗	✗	✓	✓	✓	✓
Heart Internet (www.heartinternet.co.uk)	Business Professional	0845 644 7750	£129.99	Unlimited	Unlimited	Unlimited	✓	✓	✗	✗	✓	✓	✓	✓
Heart Internet (www.heartinternet.co.uk)	Reseller Professional	0845 644 7750	£349.99	Unlimited	Unlimited	Unlimited	✓	✓	✗	✗	✓	✓	✓	✓
ICUK www.icukhosting.co.uk	Professional	0845 009 9175	£30	250MB	1GB	50	✓	✓	option	✓	✓	✓	✓	✗
ICUK www.icukhosting.co.uk	Advanced	0845 009 9175	£50	2GB	2.5GB	150	✓	✓	option	✓	✓	✓	✓	✗
ICUK (www.icukhosting.co.uk)	Enterprise	0845 009 9175	£80	2GB	500MB	Unlimited	✓	✓	option	✓	✓	✓	✓	✗
ICUK (www.icukhosting.co.uk)	Professional Plus	0845 009 9175	£90	500MB	5GB	100	✓	✓	option	✓	✓	✓	✓	✗
ICUK (www.icukhosting.co.uk)	Premium Plus	0845 009 9175	£150	1GB	12.5GB	500	✓	✓	option	✓	✓	✓	✓	✗
ICUK (www.icukhosting.co.uk)	Enterprise Plus	0845 009 9175	£300	2GB	20GB	Unlimited	✓	✓	option	✓	✓	✓	✓	✗
ICUK (www.icukhosting.co.uk)	Reseller Windows	0845 009 9175	£200	Unlimited	Unlimited	Unlimited	✓	✓	option	✓	✓	✓	✓	✗
ICUK (www.icukhosting.co.uk)	Reseller Linux	0845 009 9175	£200	Unlimited	Unlimited	Unlimited	✓	✓	option	✓	✓	✓	✓	✗
ICUK (www.icukhosting.co.uk)	Reseller Enterprise	0845 009 9175	£500	Unlimited	Unlimited	Unlimited	✓	✓	option	✓	✓	✓	✓	✗
JAB Web Hosting (www.jabwebhosting.com)	Mail – M105	0800 043 0153	£15.17	256MB	3GB	50	✗	✗	✓	✓	✓	✓	✓	✓
JAB Web Hosting (www.jabwebhosting.com)	Home – H25	0800 043 0153	£24.47	1GB	8GB	50	✓	✗	✓	✓	✓	✓	✓	✓
JAB Web Hosting (www.jabwebhosting.com)	Professional – P55	0800 043 0153	£45	2GB	15GB	75	✓	✓	✓	✓	✓	✓	✓	✓
JAB Web Hosting (www.jabwebhosting.com)	Reseller – R25	0800 043 0153	£97.88	2GB	30GB	250	✓	✓	✓	✓	✓	✓	✓	✓
JAB Web Hosting (www.jabwebhosting.com)	Reseller – R105	0800 043 0153	£271.60	4GB	Unlimited	Unlimited	✓	✓	✓	✓	✓	✓	✓	✓
LCN (www.lcn.com)	Blog	01438 342 490	£20	100MB	1GB	5	✗	✗	✓	✓	✓	✓	✓	✗
LCN (www.lcn.com)	Starter	01438 342 490	£30	1GB	1GB	10	✓	✗	✓	✓	✓	✓	✓	✗
LCN (www.lcn.com)	Starter	01438 342 490	£30	1GB	1GB	10	✓	✗	✓	✓	✓	✓	✓	✗
LCN (www.lcn.com)	Dynamic	01438 342 490	£50	2GB	2GB	20	✓	✓	✓	✓	✓	✓	✓	✗
LCN (www.lcn.com)	Premium	01438 342 490	£80	5GB	5GB	50	✓	✓	✓	✓	✓	✓	✓	✗
LCN (www.lcn.com)	Unlimited	01438 342 490	£120	Unlimited	Unlimited	Unlimited	✓	✓	✓	✓	✓	✓	✓	✗
LD Hosts (http://ldhosts.co.uk)	LD Budget (Linux)	07891 235858	£11.88	1GB	1GB	500	✓	✗	✗	✓	✓	✓	✓	✗
LD Hosts (http://ldhosts.co.uk)	LD Home (Linux)	07891 235858	£23.88	10GB	10GB	5,000	✓	✗	✓	✓	✓	✓	✓	✗
LD Hosts (http://ldhosts.co.uk)	LD Pro (Linux)	07891 235858	£41.88	50GB	50GB	20,000	✓	✗	✓	✓	✓	✓	✓	✗
LD Hosts (http://ldhosts.co.uk)	LD Unlimited (Linux)	07891 235858	£60	Unlimited	Unlimited	Unlimited	✓	✗	✓	✓	✓	✓	✓	✗
LD Hosts (http://ldhosts.co.uk)	Windows Home	07891 235858	£17.88	2GB	2GB	1,000	✓	✗	✓	✓	✓	✓	✓	✗
LD Hosts (http://ldhosts.co.uk)	Windows Unlimited	07891 235858	£60	Unlimited	Unlimited	Unlimited	✓	✗	✓	✓	✓	✓	✓	✗
Media Temple (http://mediatemple.net)	Shared-Server Pro	+1 310 841 5500	£64	2GB	1TB	1,000	✓	✓	✓	✓	✓	✓	✓	✓
Media Temple (http://mediatemple.net)	Shared-Server Advanced	+1 310 841 5500	£109	5GB	1.5TB	5,000	✓	✓	✓	✓	✓	✓	✓	✓
NameHog (www.namehog.net)	Email Only	01604 212 904	£11.99	2.5GB	15GB	10	✗	✗	✓	✓	✓	✓	✓	✓
NameHog (www.namehog.net)	Starter	01604 212 904	£36.99	10GB	150GB	Unlimited	✗	✗	✓	✓	✓	✓	✓	✓
NameHog (www.namehog.net)	Home Pro	01604 212 904	£59.99	25GB	Unlimited	Unlimited	✓	✓	✓	✓	✓	✓	✓	✓
NameHog (www.namehog.net)	Business	01604 212 904	£109.99	Unlimited	Unlimited	Unlimited	✓	✓	✓	✓	✓	✓	✓	✓
Namesco (www.names.co.uk)	StartUp Plus	0845 363 3632	£89.99	500MB	5GB	10	✓	✓	✓	✓	✓	✓	✓	✓
Namesco (www.names.co.uk)	Business	0845 363 3632	£149.99	2,000MB	20GB	100	✗	✓	✓	✓	✓	✓	✓	✓
Namesco (www.names.co.uk)	Business Plus	0845 363 3632	£89.99	3,000MB	30GB	200	✓	✓	✓	✓	✓	✓	✓	✓
Namesco (www.names.co.uk)	Designer	0845 363 3632	£239.88	1GB	20GB	200	✓	✓	✓	✓	✓	✓	✓	✓
Namesco (www.names.co.uk)	Designer Plus	0845 363 3632	£479.88	Unlimited	30GB	Unlimited	✓	✓	✓	✓	✓	✓	✓	✓
Netcetera www.netcetera.co.uk	DEVELOPER	0800 808 5450	£32.89	1GB	Unlimited	500	✓	✓	✓	✓	✓	✓	✓	✓
	ONE	0800 808 5450	£109.99	5GB	Unlimited	1000	✓	✓	✓	✓	✓	✓	✓	✓
	RESELLER	0800 808 5450	£274.89	Unlimited	Unlimited	1000	✓	✓	✓	✓	✓	✓	✓	✓
	VM500 Server	0800 808 5450	£300	20GB	Unlimited	Unlimited	✓	✓	✓	✓	✓	✓	✓	✓
	2200DC Server	0800 808 5450	£720	160GB	Unlimited	Unlimited	✓	✓	✓	✓	✓	✓	✓	✓
	3000DC Server	0800 808 5450	£1,200	2x500GB	Unlimited	Unlimited	✓	✓	✓	✓	✓	✓	✓	✓
	2600QC Server	0800 808 5450	£1,800	2x500GB	Unlimited	Unlimited	✓	✓	✓	✓	✓	✓	✓	✓
Netplan (www.netplan.co.uk)	Shared 100	0207 1000 424	£60	100MB	1GB	5	✓	✓	✓	✓	✓	✓	✓	✓
Netplan (www.netplan.co.uk)	VS100	0207 1000 424	£600	5GB	5GB	5	✓	✓	✓	✓	✓	✓	✓	✓
Netplan (www.netplan.co.uk)	VS200	0207 1000 424	£1,000	10GB	10GB	10	✓	✓	✓	✓	✓	✓	✓	✓

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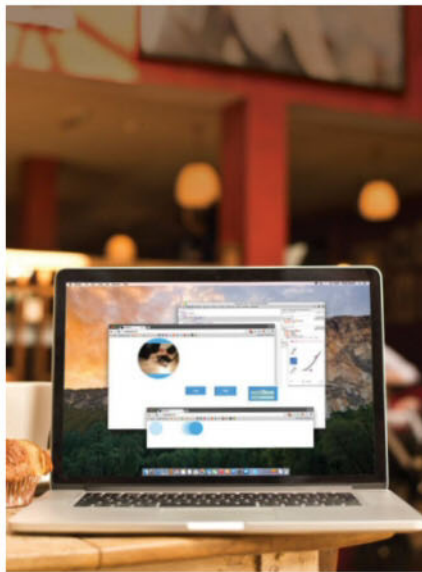**FREE WEBSITE X5 HOME EDITION WORTH £14.99**
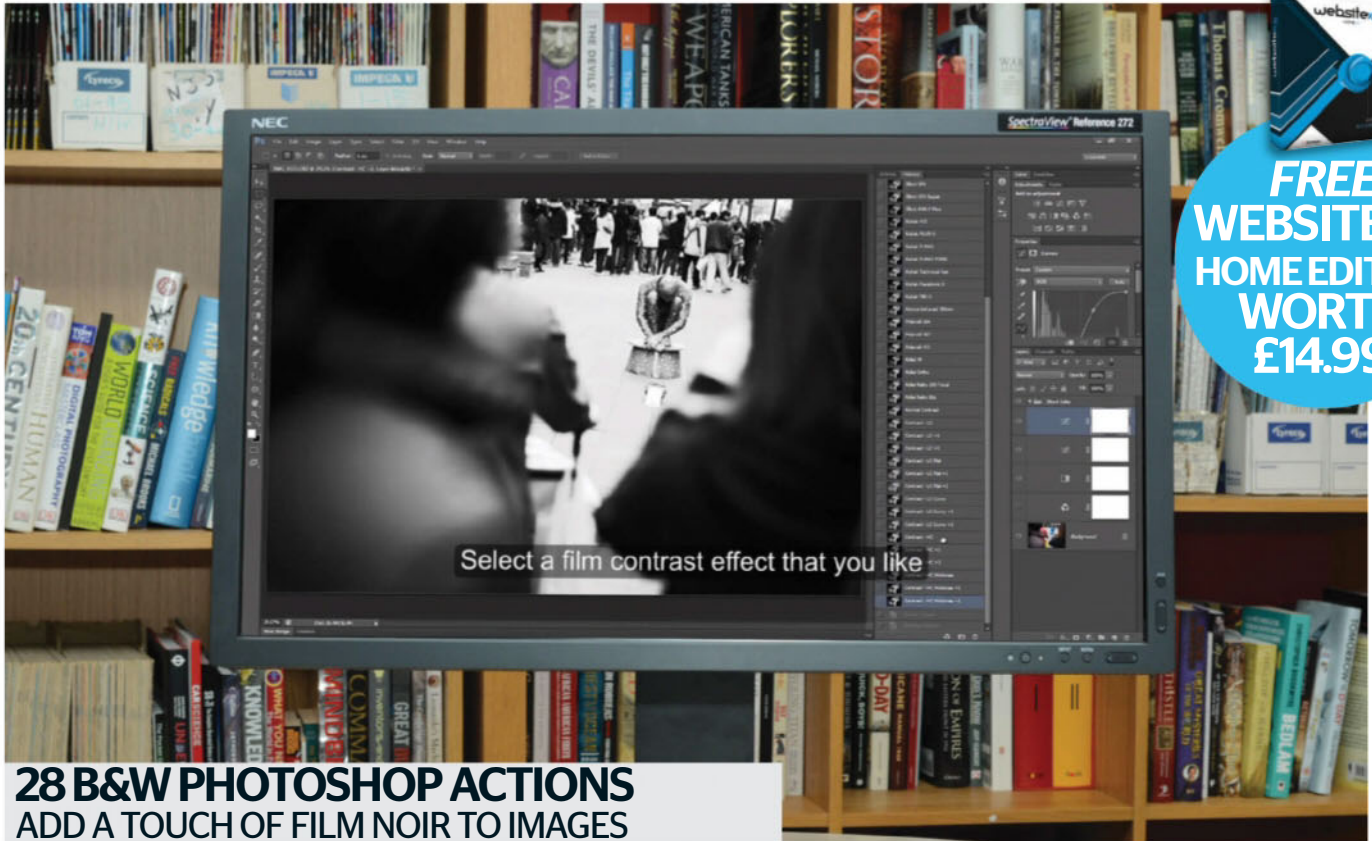
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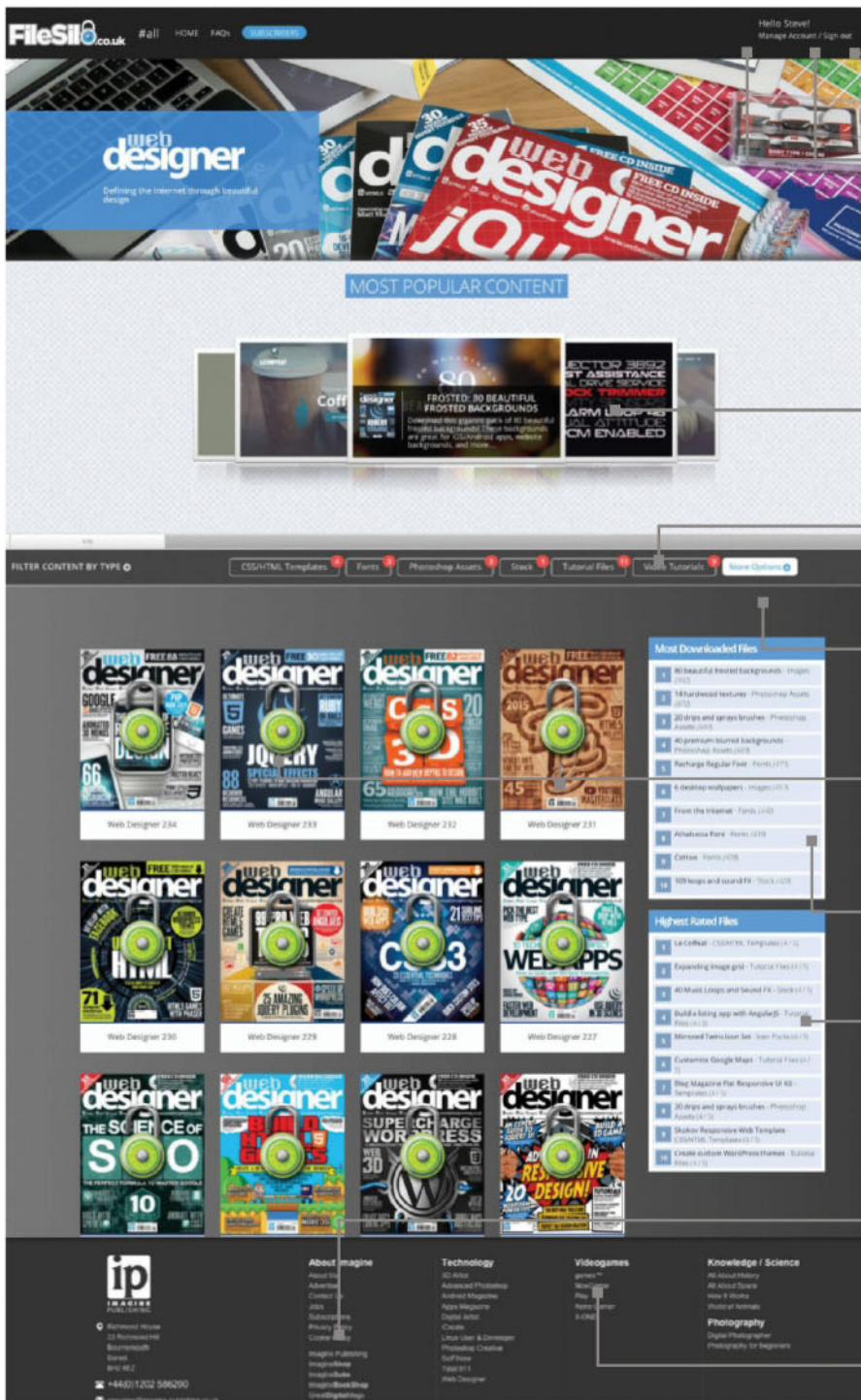
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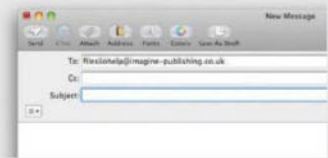
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